Annual Report
1983

noranda

Annual Meeting
May 4, 1984, 2:30 p.m.
Royal York Hotel, Toronto, Canada

Reference
In this report unless indicated otherwise, divisions and/or companies are wholly owned; production is for the calendar year 1983; tons means short tons of 2,000 lbs.; mineral inventories are as at Dec. 31/83; financial data is in Canadian dollars.

Transfer Agent and Registrar
Canada Permanent Trust Company, Toronto, Vancouver, Calgary, Winnipeg, Montreal, Saint John, N.B., Halifax, Charlottetown and St. John's, Nfld.

The Chase Manhattan Bank, New York, N.Y.

Multinational Guidelines
In its international investment and trading activities Noranda continues to respect and adhere to the guidelines for multinational enterprises as established by the OECD. Noranda also supports the work at the United Nations for the development of guidelines to have universal applicability to an enterprise operating outside its home state.

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An English or French edition of this Report may be obtained from the head office of the Company, P.O. Box 45, Commerce Court West, Toronto, Canada, M5L 1B6.

On peut se procurer la version française ou anglaise de ce rapport en en faisant la demande au siège social de la compagnie, B.P. 45, Commerce Court West, Toronto, Canada, M5L 1B6.

More detailed information may be obtained by writing the Secretary at the address noted above.

noranda

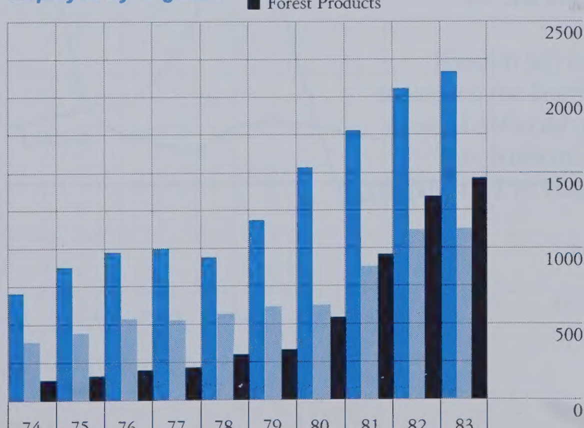
Highlights – *$ millions*	*1979*	*1980*	*1981*	*1982*	*1983*
Year					
Revenue	2,484.7	2,889.3	3,030.4	2,830.2	3,100.1
Income and production taxes	227.0	242.2	59.4	(65.9)	(11.9)
Share of earnings (losses) in associates	70.1	83.1	(1.5)	(74.7)	(8.7)
Earnings (loss)	394.5	408.4	164.8	(82.9)	(34.6)
December 31					
Working Capital	687.4	821.5	867.0	1,041.7	971.3
Long-term debt	602.5	580.5	922.3	1,722.9	2,061.8
Shareholders' equity	1,463.2	2,001.0	2,869.4	2,705.9	2,599.8

Ownership – *December 31, 1983*	*Registered holders of common shares*	*Number of shares (000)*	*Ownership*
Canada	27,000	123,097	96.6%
U.S.A.	2,100	2,656	2.1
Other	400	1,735	1.3
	Registered holders of preferred shares		
Canada	5,624	3,579	99.9%
U.S.A.	18	3	.1%
Other	15	1	–%

Average Net Assets Employed by Segment

Metals and Minerals
Manufacturing
Forest Products

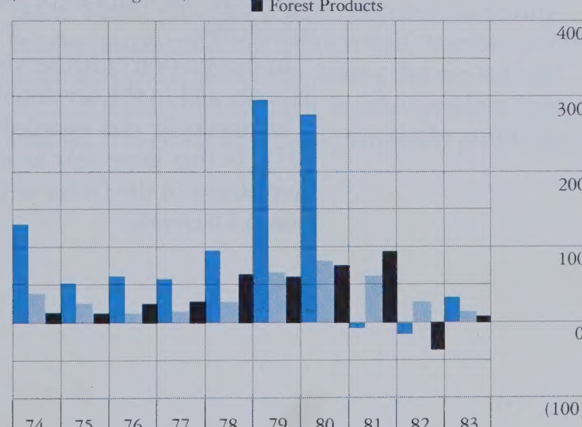
$ Millions



Earnings by Segment
(before borrowing costs)

Metals and Minerals
Manufacturing
Forest Products

$ Millions



John R. Bradfield

John R. Bradfield, Honourary Chairman of Noranda Mines Limited, who passed away October 29th, 1983, at the age of 84, was an internationally recognized and respected business leader and for more than 60 years a central figure in the Noranda organization.

As well as his distinguished contributions to Noranda and the Canadian mineral industry, he had a life-long interest in the education of young people, propping up the ailing mining faculties of McGill and Queen's universities in the mid-fifties, generating interest in mining as a career, and creating and chairing the Canadian Mineral Industry Education Foundation. Recognition of his contribution to education came in the style most appropriate to his efforts with the creation of the John R. Bradfield Education Fund in 1979.

Running parallel with his interest in education was his ability to recruit, in the mid to late fifties, the men who have since led the Noranda Group in its growth and diversification

Born in Morrisburg, Ontario, in1899, he graduated from McGill University in 1922 with a B.Sc. in civil engineering. After working on projects in the United States, he joined the budding Thomson-Chadbourne Syndicate to work on the engineering and construction of the Horne smelter at Noranda, Quebec.

He remained in Noranda until 1938, then moved to the Toronto Corporate Office as Secretary, followed by appointments as Executive Assistant to the President, then Vice-President, and in 1956, President and Chief Executive Officer. He became Chairman and CEO in 1964, relinquishing the office of Chief Executive Officer in 1968 but remaining as Chairman of the Board. He was named Honourary Chairman in 1974, and until his death researched and wrote the histories of Noranda and its subsidiaries.

In recognition of his service to the mineral industry and to the development and advancement of engineers he was awarded the Inco Medal in 1973. In that same year he was invested as a Companion of the Order of Canada by Her Majesty Queen Elizabeth.

Directors' Report to the Shareholders

Earnings and Dividends

Although better than the previous year, Noranda's results in 1983 were totally unsatisfactory. Before unusual items, there was a loss of $5.6 million compared with $140.2 million the previous year. After unusual items, the loss was $34.6 million compared with $82.9 million in 1982.

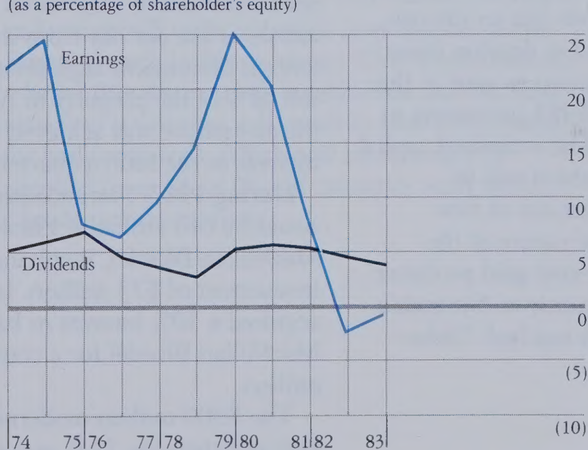
Earnings (losses) per share	*1982*	*1983*
Metals and minerals	$(.18)	$ .59
Forest products	(.50)	.03
Manufacturing	(.12)	.13
Operating earnings (losses)	$(.80)	$ .75
Unusual items	.49	(.25)
Cost of borrowing*	(.69)	(1.08)
Primary losses	$(1.00)	$(.58)

* Includes preferred dividends.

Four quarterly dividends of 12.5¢ per share on the common shares were paid during the year, for a total of 50¢ compared with 75¢ in 1982.

Unusual items had a net adverse impact on 1983 results of $29.0 million after taxes. Given the changed economic circumstances, it was determined that the carrying value of certain mining properties had been impaired, and they were written down by a total of $54.6 million after taxes. As a partial offset, there was a bookkeeping gain of $12.5 million resulting from a share issue by Placer Development, and MacMillan Bloedel and Placer Development realized a profit on the sale of certain assets, Noranda's share of which was $13.1 million after taxes.

Earnings and Dividends
(as a percentage of shareholder's equity)



The year was characterized by a consumer-led economic recovery of some strength in North America, but which was slow and ragged in most of the rest of the industrialized world. Responding to the improved conditions, demand and prices for a number of Noranda Group products increased significantly during the first half of the year. However, once consumers' inventories were rebuilt, demand for certain important products slackened and prices collapsed during the third and fourth quarters.

The quarterly pattern of operating earnings per share, before unusual items and borrowing costs, was as follows:

	Metals & Minerals	*Forest Products*	*Manu-facturing*	*Total*
First	$.10	$(.13)	$(.07)	$(.10)
Second	.25	.05	(.01)	.29
Third	.10	.01	.08	.19
Fourth	.14	.10	.13	.37
Year	$.59	$ .03	$ .13	$ .75

Metals and minerals results were erratic, improving during the first half, largely as a result of better prices for copper, despite a collapse in prices for precious metals. However, during the second half copper prices again fell sharply and markets for precious metals continued weak. Thus, despite steady improvement in zinc demand and prices, operating earnings for the year as a whole were totally unsatisfactory.

Manufacturing results improved steadily throughout the year, despite continued weakness in markets for wire and cable and brass mill products. The gain was entirely due to improving markets for aluminum, which permitted the reactivation of capacity previously shut down and the start-up of the new potline at the New Madrid, Missouri, reduction plant. Forest products results reflected improving lumber markets during the first half. Lumber prices again dropped significantly during the second half, but a sluggish improvement in other product lines enabled this group to remain marginally profitable.

Directors' Report

Borrowing costs rose substantially due to increasing debt and the absence of significant capital gains which had reduced the net cost in 1982.

Results in 1983 were disappointing in relation to previous expectations, particularly during the second half when it had been assumed that the economic recovery would produce markets for Noranda Group products much stronger than in fact resulted. The fundamental reasons were the sluggish recovery outside North America, weak capital spending on which the markets for many products depend, and competitive currency devaluations by a number of competing resource producing countries.

In the circumstances, cost control and cash conservation remained the overriding priority. A number of operations were closed for varying periods (in some cases throughout the year), capital expenditures were further curtailed, salaries of officers remained frozen, and a determined effort was continued to ensure that wage and salary changes at other levels in the organization were reasonable in the circumstances. In the aggregate, wage and salary adjustments were less than those suggested by the 6 and 5 guidelines.

Major Developments

Despite the need for austerity, two major new projects were begun in 1983. One represented a significant new opportunity and the other was to ensure our continued ability to compete in an important business segment.

At Hemlo, in Northwestern Ontario, drilling has indicated reserves of some 22 million tonnes grading 9.6 grams of gold per tonne (0.28 ounces per short ton) on the Golden Giant and Teck/Corona quarter claim properties in which Noranda has an interest. In May, the decision was reached to develop these properties in stages, with production to start at the rate of 1,000 tonnes per day in 1985 increasing to 3,000 tonnes per day in 1987. The estimated capital cost will exceed $200 million, which will be returned to Noranda with interest out of first profits. Due to the grade and the nature of the orebody, this mine will be a low-cost gold producer which should contribute significantly to Noranda's earnings when full production is reached. Unfortunately, claims covering a major portion of the deposit are subject to an ownership dispute which, while without merit, is complicating the development of the orebody.

The other major new project is the replacement of Maclaren's two existing newsprint machines with a single larger machine at an estimated net capital cost of $117 million, mostly in 1984 and 1985. While increased capacity will result, this project is largely driven by the need to ensure that product quality will be of the highest standard in an increasingly competitive market.

Other smaller projects that have been initiated include development of a phosphate rock deposit in Florida, some gold-bearing remnants of the Horne mine in Quebec, and a recently-discovered orebody at Mines Gaspé in Quebec underlying the Murdochville townsite. In addition, Canadian Hunter has received regulatory permission to strip natural gas liquids from production in the Elmworth field, and has agreed to participate in what may prove to be a major heavy oil development project in the Primrose area of Alberta.

In November, Kerr Addison purchased a 32.6 percent interest for $80 million in Anderson Exploration Ltd., a private company based in Calgary, which has been engaged since 1968 in oil and gas exploration and production activities. Anderson's proven plus probable reserves are 679 billion cubic feet of natural gas and 8.1 million barrels of oil and liquids.

After the year end, Placer Development announced plans to place the Kidston gold deposit in Queensland, Australia into production at a cost of some A$170 million. Production is expected to start before the end of 1985 at an initial rate of 11,890 tonnes of ore per day from the open pit. Under foreign investment regulations, Placer is required to sell 45% of the property to Australians, and part of the divestiture was achieved through sale of a 20% interest in the fourth quarter.

During 1983, Noranda participated in share issues by two affiliates, Placer Development and MacMillan Bloedel, involving an aggregate new investment of $73 million. In addition, Fraser acquired a 50% interest in Island Paper from MacMillan Bloedel for a consideration of $26 million.

The $200 million modernization of Fraser's pulp mill at Atholville, N.B. was virtually completed during 1983. The environmental improvement program at Maclaren's pulp mill at Thurso, Quebec will be completed in 1984.

Financial Position

Capital expenditures in 1983 totalled $399 million compared with $706 million the previous year. Of the 1983 total, $90 million was for routine projects to improve efficiency and environmental control and to maintain production. The balance of $309 million was spent on the various major projects, the largest items being the programs at the Fraser and Maclaren pulp mills and the new Hemlo project. Investments and advances totalled $99 million compared with $29 million in 1982.

Despite the reported loss, $170 million of cash was generated from operations during the year. Nevertheless, with continued dividends and capital expenditures, total long-term debt rose by $304 million and net working capital declined by $70 million.

General Business Environment

The recent recession has been particularly devastating for producers of primary materials. This has meant that, because of the relative importance of our resource industries, the impact of the recession on Canada was more severe than was the case for most of our trading partners. This has led to a fundamental change in perceptions in many circles.

A few years ago, it was widely perceived that Canada's wealth in resources was a guarantee of future prosperity, and that companies engaged in resource production could carry very heavy tax and regulatory burdens without damage to these industries and the economy in general. Events have proved this perception to have been totally perverse.

However, recent conditions have resulted in an equally perverse perception – that Canada's resource industries will make a limited contribution to the future growth in the economy. This is premised on a belief that downsizing, substitution and the technological revolution will result in shrinking markets for basic materials, which will increasingly be supplied from Third World countries with which Canada cannot compete.

This perception overlooks certain fundamental truths. Substitution is not a new phenomenon, but rather has been going on for at least 50 years. Demand for primary materials will continue to grow, albeit more slowly than in the past, and new sources of production will be needed not only to supply the additional requirements but also to replace resources that have become exhausted. Canadian expertise and technology in the resource industries are second to none in the world and Canadian resource producers have competed successfully with Third World countries for many decades.

Canada's competitive position in the world at the moment is a difficult one. This is due in part to the fact that our inflation rate and cost increases have been higher than those of many of our competitors. However, a major factor has been the strength of the Canadian dollar in relation to all currencies except that of the U.S. When this was coupled with major competitive currency devaluations by competing countries in Latin America, Scandinavia and Africa, the impact was nearly lethal.

Presumably, this is a temporary phenomenon, and the overvalued U.S. and Canadian dollars will decline to more realistic levels. The competitive advantage obtained by major devaluations will prove to be transitory. Moreover, the determined effort being mounted by all Canadian industry to improve efficiency and productivity will significantly improve our competitive position.

We have competed successfully in the past and we will in the future. On the part of most Canadians, there is a new attitude of realism in terms of our position in the world, and a realization that we cannot for long draw more out of the system than we are prepared to put in. Provided that this realism does not dissipate in the face of improving economic

conditions, our competitive position can be strong. In this regard, progress to date in controlling inflation is encouraging, although the staggering level of government deficits is a matter of serious concern.

Outlook

At the moment, market conditions for the products of the Noranda Group are mixed. Demand for zinc, aluminum and paper is reasonably strong, and markets for pulp and newsprint are showing signs of improvement. On the other hand, prices of wood products, copper and precious metals are weak and markets for natural gas, lead, molybdenum and manufactured products remain depressed.

Noranda's plans for 1984 and beyond are based on the expectation that the economic recovery in North America will continue, sustained in part by a revival in business capital spending in the United States, and that there will be some improvement in the level of economic activity in Europe and Japan. However, in relation to previous recoveries, it is expected that this one will continue to be slow and uneven, although perhaps more sustainable.

Accordingly, it is expected that the markets for Noranda Group products that are still depressed will show some improvement as the year progresses. Until this happens, however, it is planned that a number of operations will remain shut down (particularly those whose sole product is copper) and that many manufacturing and forest products facilities will operate at below-capacity levels. In addition, depressed copper markets may result in a shortage of feed for the metallurgical facilities.

Improved markets, together with continued rigorous control of costs, should permit a return to profitability in 1984. However, unless the economic recovery outside North America is much stronger than expected, the level of profitability will not be impressive and will represent a totally inadequate return on assets employed.

Perhaps this slow recovery will prove to be a blessing in disguise, if it results in a more prolonged period of growth than has been customary following past recessions. Assuming this happens, the outlook for Noranda over the next few years is positive. Noranda's basic position in the industries in which it operates is strong, and its diversification – both across several sectors of the resource industries and within those sectors – is proving its worth. Noranda remains in a good position to benefit from the economic recovery as it develops and to respond quickly to any new opportunities that may arise.

Circumstances over the past two years have been extremely difficult for employees throughout the Noranda Group. The fact that Noranda has emerged from this period in a strong position is due to their dedicated and highly effective efforts.

On behalf of the Board,

Alfred Powis

Chairman and Chief Executive Officer

Toronto, Canada
February 24, 1984

Report on Operations

1983 will certainly go down in history as another sad and difficult year for much of the resource industry in North America. In Noranda's case, this meant particular difficulties for the base metal mining and copper manufacturing operations. On the other hand, the metallurgical operations were relatively steady during the year, while aluminum and some forest products were early respondents to the economic recovery.

Metals and Minerals

In the Noranda metals and minerals division, zinc and copper are the major products. In addition, Noranda produces significant quantities of silver, gold, lead and molybdenum. Four major metallurgical operations are central to the economy of the company's own mines and additionally, provide custom services to others.

In the circumstances of 1983, virtually none of Noranda's copper or molybdenum mines could operate unless there were profitable values of zinc or precious metals produced as well. For Noranda these conditions led to the inescapable closure of three mines, bringing the total number of closed mines to eight, some of which will not be reopened until there is a significant and lasting increase in metal prices.

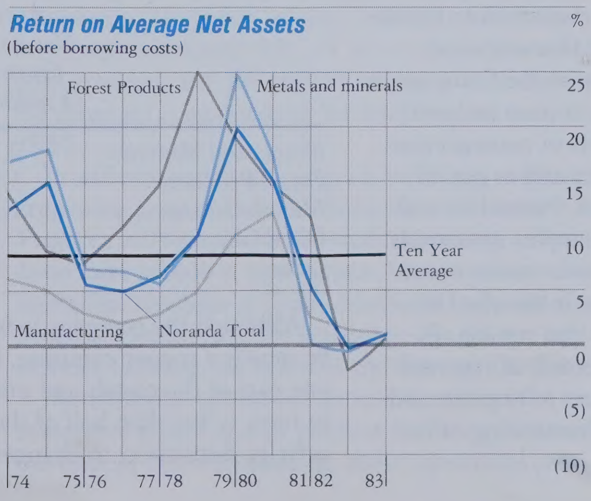
To some extent the life of some of the marginal operations could be prolonged if service costs were lower, wage rates lower and greater flexibility possible in the operations. There have been spectacular achievements throughout the Noranda Group in lowering the unit costs of production by various means, although lowering the wage rate has not been one. It is probable that Canadian resource operators will achieve greater understanding in the next couple of years that the jobs they offer are not worth what they once were. The level of competition from other producers in many different parts of the world is just too formidable.

The zinc industry operated at or near practical capacity while copper remained very close to the depressed level of 1982. The problem with copper is the combined effect of oversupply and the willingness of certain countries to sell at any price.

Gold and silver march to somewhat different drummers and depending on a mine's cost of production their markets, at least, could be regarded as generally satisfactory. However, silver prices have been quite low and gold prices have been soft.

The cyclical nature of metal prices has always presented some difficulty in deciding what may be reasonably shown as the quantity of reserves at each mine. Under the strict definition of "ore" which is "mineral that can be extracted at a profit", some mines that are now shut down for economic reasons obviously have no "ore" at all. Since there is always hope that prices will increase more than cost, it has become practice to report not "ore" but "mineral inventory". Noranda has followed this practice and the reserves quoted in this report have been mostly obtained by deducting tonnages mined from last year's inventory and adding new tonnages discovered or proven.

Return on Average Net Assets
(before borrowing costs)



Oil and Gas

The environment for the oil and gas industry was fairly constrained during 1983. In particular, the high Canadian gas export price precluded much volume, which was also depressed by the warm winter of 1983. However, things began to right themselves toward the end of the year with increased industrial energy consumption, the onset of a cold winter and some prospect of adjusting gas prices to more reasonable levels. Some successful drilling and the success of smaller heavy oil extraction plants also added to the increasing buoyancy being felt in the industry at the end of the year.

Forest Products

Forest products operated in a somewhat similar environment, although certainly not as severe. Lumber, in particular, had a rather spectacular rise in price and demand at the beginning of the year due to the then-lowered mortgage interest rates and the consequent rise in housing starts. As the year wore on, however, these prices softened down to break-even levels and it was only fine papers that showed a consistent, strong increase throughout the year. Pulp was still being sold in an environment of oversupply and competitive disadvantage due to the Scandinavian currency devaluations. At year's end there were indications, however, that these prices were firming and that our operations would have a much better 1984. Nevertheless, continued attention had to be paid to plant improvement and there were a couple of unfortunate plant closures brought about by apparently permanent inefficiencies of operation.

Manufacturing

Noranda's manufacturing operations suffered from the general malaise of the economy and a very severe depression in the capital spending programs of electrical utilities. This meant that, for example, sales of wire and cable to utility operations declined by as much as 90% in certain periods of the year, and the market for nuclear tubes was uncertain at best. Only the rebound in the aluminum industry gave real cause to cheer at the year end. The change in the fortunes of this industry, based as it is in the United States, the world's strongest economy, went a long way to restoring corporate profitability.

Managing for Productivity

The year's operations had three main thrusts for the Noranda Group as a whole. The first and most important was what is referred to in the Company as employee involvement. This is a serious and well-organized attempt to reduce levels of management to the absolute minimum number and to put all employees as directly in charge of themselves and their work as is conceivable in complex operations. While this activity has had the unfortunate consequence of eliminating many jobs, it has also the other effect of securing the jobs that remain. In addition, the company's safety record, as reported elsewhere in this report, continues to improve and along with it the employee's understanding of his job, how to do it and how it fits into the overall environment in which the company operates.

The second principal thrust has been to improve cost efficiencies. This has meant increasing productivity at individual work stations, improved operating procedures with consequently lowered maintenance costs, and continued progress towards the high quality standards we try to maintain. Success is never 100% in such activities. However, it is a pleasure to report that by far the bulk of our continuing operations can now be considered to be world class in cost competitive terms.

Finally, the company maintained its commitment to complete its major capital projects and undertake only those which have an unusually high expected rate of return. Capital expenditures were $399 million compared with $706 million in 1982. Major completions included the rebuild of Fraser's pulp mill in Atholville, New Brunswick, the construction of the roaster acid plant at Canadian Electrolytic Zinc in Valleyfield, Quebec, the commissioning of the third potline at Noranda Aluminum in New Madrid, Missouri and the commissioning of Goldstream, a new copper/zinc mine near Revelstoke in British Columbia.

Corporate Profile

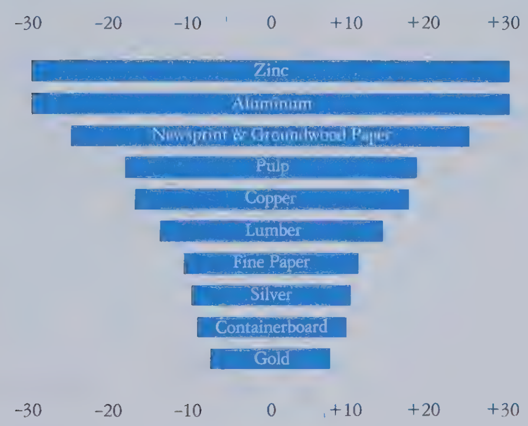
For the reader to have an appropriate understanding of the company's affairs, it is well at this point to consider just what Noranda is today. Noranda considers itself to be a natural resource development and operating company and as such the total average net assets and sales of those companies, including associated companies included in the consolidated accounts break down as follows:

	Average Net Assets Employed ($ millions)	*Sales*	*Number of Employees*
Metals and Minerals	2,705	1,499	13,000
Forest Products	3,381	3,252	26,500
Manufacturing	1,359	1,910	10,600
Oil & Gas	367	107	200
Other	461	67	1,400

Although the company is frequently considered to be mostly a copper company, in fact, copper is only one part of the metals and minerals division which, in turn, is less than half of the company's overall activity. Sensitivity to changes in prices at normal

level of operations is indicated in the following table:

Approximate Effect on Earnings of 10% Price Fluctuations



In addition to the foregoing, the company maintains a high level of activity in mineral exploration, hydrocarbon exploration, research and development and technology investment. The last of these activities was begun in 1983 and, so far as is possible to tell at present, has made satisfactory investments in such things as lasers, computer software, genetic engineering and sophisticated electronic hardware. The other outreach activities are covered elsewhere in this report.

Capital Expenditures

In terms of capital expenditures, the major new initiative has been in the Hemlo gold field. The Company was able to secure a meaningful position, at the beginning of 1983, in a joint venture to develop the property held by Golden Sceptre Resources Ltd. and Goliath Gold Mines Ltd. Together with participation in the shares of those companies, Noranda's overall position in the property is approximately 50%. A new mine estimated to cost in excess of $200 million is now well underway for expected completion of the first stage in early 1985.

In addition to Hemlo, projects were approved for reopening parts of the old Horne mine (Remnor Project), in Noranda, Que., shaft deepening at the Lyon Lake property, near Ignace, Ont., a new newsprint machine at James Maclaren Industries in Masson, Quebec, and the formation of a joint venture utilizing the assets of the Norcast Division.

Metallurgical operations remain central to the company's affairs and all produce the best profits of the Group. Notwithstanding, these operations presently and over the long term are grappling with a shortage of feed for the plants, which is only going to get worse as depressed prices preclude the development of mines. Accordingly, every effort is being made to develop new sources of concentrate supply as well as scrap materials which can be handled by our smelters. This involves various bits and pieces of capital improvements in order to maintain operating flexibility.

General

Aside from the cost reduction activities alluded to previously, there have been very considerable efforts to extend the company's marketing and sales reach. Results have included the largest contract ever obtained by Canada Wire – a $62 million sale to an Egyptian utility, sale of nuclear reactor tubes to Romania, heat exchanger products in the United States, large specialty wire rope orders for James Bay in Quebec and the Ivory Coast, and development of specialty paper markets in North America. These successes exemplify the company's ability to produce world cost competitive products.

In view of the complexity of the company it was felt that this overview, supplemented by tabular data, would suffice instead of the narrative found on various operations in previous years.

Other sections of this report deal in more detail with employees and their involvement, markets, exploration, research and development and environmental control.

The whole is a tale of a broadly based resource company whose employees have risen to the challenge of extreme competition in a tough economic environment.

President and Chief Operating Officer

Toronto, Canada
February 23, 1984

Safety

Despite the emphasis on the nuts and bolts of operations, Noranda's paramount concern is safety, that intangible component that has a hidden but real influence on all operations in the Group.

Although safety performance continued to show improvement at some individual operations, most noticeably in our manufacturing sector, every accident is one too many and regretably, despite our efforts, serious accidents do occur. The ultimate goal is never less than 'Frequency Zero', a target that has been achieved at a number of companies in the Group this year.

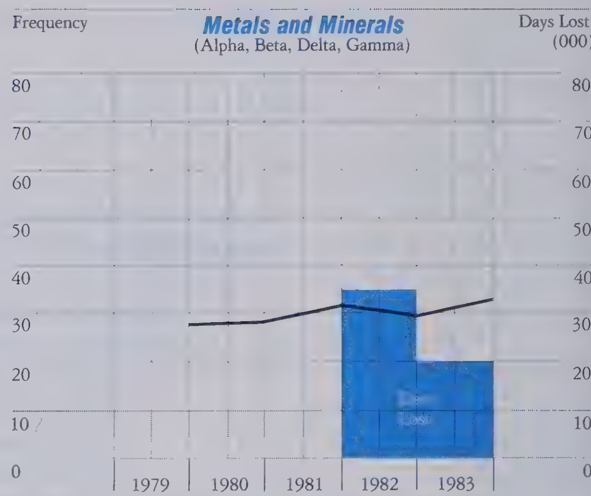
The accompanying tables and graphs summarize the safety record of the main components of the Noranda Group. Frequencies shown are the numbers of lost-time injuries per million hours worked.

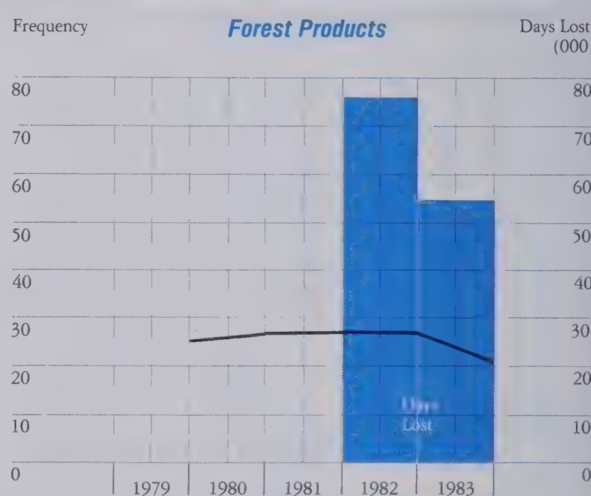
Metals and Minerals (Alpha, Beta, Gamma, Delta)	*1981*	*1982*	*1983*
Hours worked (000)	27,903	23,065	19,886
Frequencies	32.9	30.8	33.6
Days lost	n/a	34,254	22,148

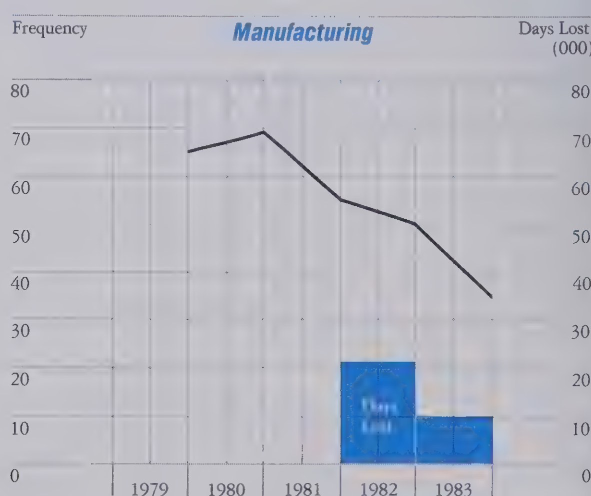
Forest Products	*1981*	*1982*	*1983*
Hours worked (000)	53,202	42,484	41,662
Frequencies	26.0	27.2	23.2
Days lost	n/a	77,061	54,425

Manufacturing	*1981*	*1982*	*1983*
Hours worked (000)	13,145	12,718	13,861
Frequencies	56.9	50.3	34.9
Days lost	n/a	11,946	9,322

n/a - not available







Employee Involvement

One of the major initiatives undertaken during 1983 was an intensified corporate commitment to a better and more efficient use of Noranda's human resources. Employee dedication and enthusiasm are critical to our survival and success. The past year has seen judicious changes in the climate and culture of companies in the Noranda Group to be more supportive of innovation and the entrepreneurial spirit at all levels.

During the year managements were encouraged to adopt a style which broadens employee participation in the decision-making process and which allows a greater decentralization of authority.

A key to this approach has been to develop and maintain an open climate of two-way communications with employees regarding policies and practices and to seek their views on matters of concern.

What is emerging with varying degrees of intensity and success is an approach to managing which encourages a fruitful and unrestricted flow of employee ideas, involvement and initiative. This serious and well-managed attempt to develop our people potential will be reflected by the presence of highly-motivated employees who identify with the pursuit of corporate objectives, and who will attain a higher degree of personal fulfillment through the achievement of these objectives.

Total Employment	*1982 Totals*	*Noranda and Subsidiaries*	*Associates*	***1983 Totals***
Canada				
Metals and Minerals	13,400	9,800	2,700	**12,500**
Forest Products	22,500	4,000	18,200	**22,200**
Manufacturing	4,200	4,300	100	**4,400**
	40,100	18,100	21,000	**39,100**
International*				
Metals and Minerals	1,900	700	1,400	**2,100**
Forest Products	4,300	1,200	3,100	**4,300**
Manufacturing	5,400	5,900	300	**6,200**
	11,600	7,800	4,800	**12,600**
Totals	51,700	25,900	25,800	**51,700**

* Includes Tara Mines, but excludes other associates outside North America which employ some 16,000 people.

Support for Education

Recognizing that all society benefits from a well-educated citizenry, Noranda has taken a major interest in the support of education through much of its 60 years of existence. Despite economic conditions that have made it necessary to manage for survival, Noranda continued this support through 1983.

The most extensive support for young people was a two-pronged program for sons and daughters of full-time Noranda employees. During the past year 62 university scholarships were awarded to members of Noranda families, while sons and daughters of more than 630 employees were part of Noranda's student employment and communications program during the summer.

Additional support for education has been exemplified by awarding graduate fellowships, bursaries, and financial support to private organizations aimed at encouraging young people to extend their education beyond the high school level. Over the past three years direct financial support for private schools, universities, fellowships and scholarships, and an educational gift matching program has totalled more than $1.5 million.

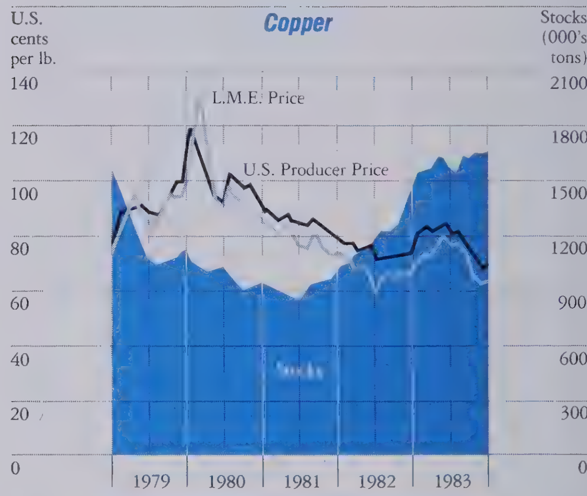
Metals and Minerals

1983 was the first year of recovery from the worst depression in fifty years. However, most minerals and metals experienced surplus production, mounting inventories and declining prices.

The reasons included excess capacity arising from earlier optimism and price surges, continued production from nationalized operations to secure employment or foreign exchange and delayed recognition that demand and prices would remain weak.

There were exceptions. Aluminum and zinc had maintained reasonable market balance through earlier cutbacks. Consumption of both metals responded to the surge in consumer durable purchases, notably automobiles and housing. Demand increased further as consumers rebuilt inventories. Stocks fell and prices rose which enabled producers to bring idle units back into operation.

However, with further economic growth and a recovery in the capital goods sector the expectation is for modestly better markets and prices.



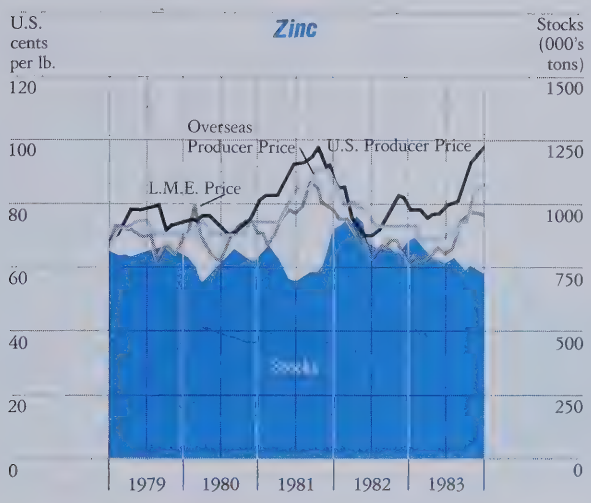
Western World Balance '000 Short tons	1981	1982	1983 Estimated
Supply	8,109	7,900	7,737
Demand	8,033	7,458	7,533
Stocks	1,024	1,466	1,670

The average monthly London Metal Exchange price rose more than US 13¢ in the first half of 1983 to over 80¢ per pound, partly in anticipation of the developing US economic recovery but also in response to heavy Chinese buying. Thereafter the price sagged to 64¢, down 3¢ on the year as inventories steadily rose. The US producer price, as reported to Metals Week, followed a similar pattern.

Total western world supplies were only marginally lower despite production cutbacks and shipments to China in excess of 350,000 tons. Although consumption in North America, led by the brass mills, recovered 11% from the depressed levels of 1982, there was a decline in the developing countries and virtually no change in Japan or Europe. The result was a further increase in the inventory surplus which surfaced in terminal market warehouses.

The severe industry distress caused by prices, adjusted for inflation, falling to their lowest levels in fifty years, prompted a petition by some US producers for import quotas on refined and blister copper.

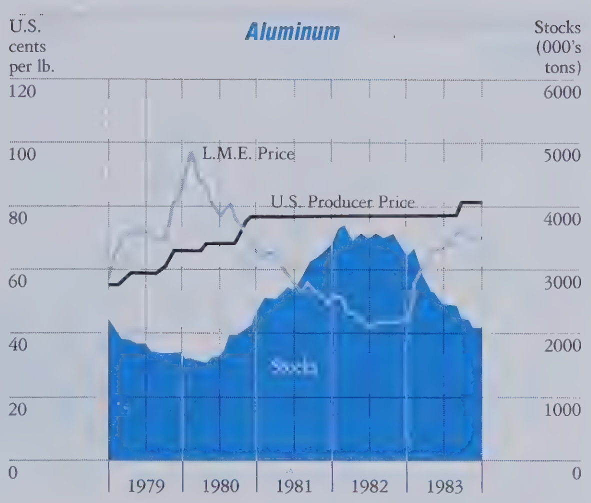
The upward trend of consumption in North America should continue in 1984 and spread into other industrialized areas, but its impact on prices will be dampened by the large surplus accumulated during the last three years.



Western World Balance '000 Short tons	*1981*	*1982*	*1983 Estimated*
Supply	4,991	4,620	4,845
Demand	4,867	4,678	4,960
Year-end Stocks	912	854	739

With the consumer-led recovery affecting demand for automobiles and housing, zinc consumption responded in all industrialized countries. Additional demand arose from the US Mint, for coinage, and from China. While higher production was encouraged by the firmer market, the net effect was a reduction in inventories. Producer stocks peaked in January at 590,000 tons and then declined by year-end to 365,000 tons or less than one month's production.

Prices were initially weak with the US producer price dropping from US 40¢ per pound to 38¢ in February before rising in four moves to 49¢. Economic activity in Europe was lagging and the overseas price responded more slowly moving from US$800 per metric ton to $750 in February before climbing to $980.



Western World Balance '000 Short tons	*1981*	*1982*	*1983 Estimated*
Supply	13,554	11,570	12,918
Demand	12,411	11,768	14,011
Year-end Stocks	3,434	3,236	2,143

Sharply reduced metal production in 1982, when prices collapsed, kept the inventory surplus at reasonable levels. Consequently, when aluminum consumption increased generally in 1983, the market strengthened. Although production increased 12%, demand rose even faster, up 19%, and stocks fell to the lowest level in three years.

LME prices rose progressively from an average of US 49¢ per pound in January to 73¢ in September and levelled off to 70¢ in December. The US producer price of 76¢ was heavily discounted early in the year but was raised to 81¢ in September.

Markets

Western World Balance '000 Short tons	1981	1982	1983 Estimated
Supply	4,303	4,187	4,192
Demand	4,280	4,179	4,178
Year-end Stocks	284	292	306

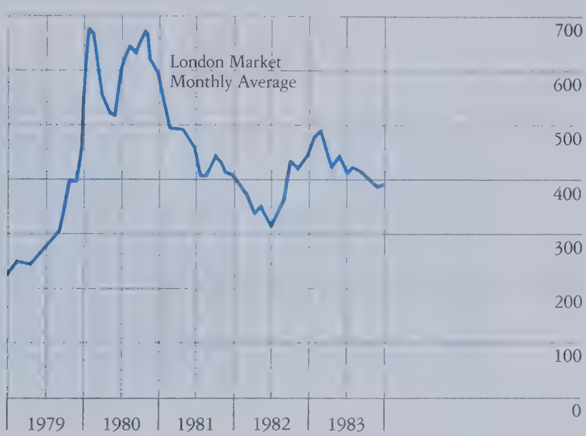
1983 was difficult for lead with further legislated reductions in the use of lead in gasoline in North America and the European community. Demand was weak for most of the year as structural changes in the market negated any cyclical economic improvement. Metal production remained at the depressed level of 1982 but was still in surplus. Producer and LME stocks rose modestly but steadily until the third quarter. Then, as a result of higher automobile production and adverse weather in North America, battery consumption rose and stocks fell.

Prices were depressed all year, beginning with an average LME of US 21.5¢ in January and ending at 18.2¢ for December. In the USA, the pattern was 22¢, dropping to 19¢ in July before reacting to 26¢ as the market improved in the fourth quarter.

Western World Balance '000,000 Troy ounces	1981	1982	1983 Estimated
Supply	420.0	395.4	452.0
Consumption	383.0	370.0	385.0
Surplus	37.0	25.4	67.0

Although somewhat more volatile, silver prices continued to follow the pattern set by gold, falling quickly from US$15 to $11 per ounce at the end of February and weakening further below $9 over the year-end. The combined increase in primary and secondary production exceeded the growth in consumption, and the continuing rise in terminal market stocks also reflected shipments from government stockpiles in some major producing countries.

Gold



Western World Balance '000,000 Troy ounces	1981	1982	1983 Estimated
Supply	31.7	36.0	37.7
Demand	34.7	35.4	33.6
Surplus (Deficit)	(3.0)	0.6	4.1

The price of gold declined sharply at the end of February from US$500 to $410 per ounce when a reduction in oil prices strengthened the perception that inflation would remain low. It remained close to that level until the third quarter, when further weakness below $380 reflected the continuing strength of the U.S. dollar, high real interest rates, and recurrent concerns about sales by central banks in countries with severe debt problems. A substantial recovery seems unlikely until renewed fears of higher inflation return to provide additional buying incentive.

Molybdenum

Western World Balance '000,000 lbs.	1981	1982	1983 Estimated
Supply	209	159	98
Demand	161	137	137
Stocks	180	202	163

The molybdenum market remained weak due to very low levels of capital investment. Although US steel operating rates rose to 60%, specialty steels were subject to import restrictions and retaliatory action.

Despite the static demand for molybdenum there was a significant reduction in stocks resulting from widespread mine closures in North America. By-product production was also down, particularly in Chile, where the molybdenum ore grade declined.

Nonetheless, inventories remained excessive and producer prices were pushed down to the US$4 range for molybdenum in oxide. Merchant prices ranged between $3 and $4 and were under pressure at year-end when production started from new and re-opened US operations.

Potash

World Balance '000 Short tons K_2O Year ended June 30	1981	1982	1983 Estimated
Supply	30,247	28,737	27,921
Demand	29,370	28,580	28,414
Difference	877	157	(493)

Lower U.S. consumption was due to poor farm commodity prices, high interest rates and a generally depressed agricultural sector. In addition, the U.S. government payment in kind subsidy program resulted in the withdrawal of approximately 60 million acres from production. The net effect was lower world demand despite an increase in the East bloc and Asian markets.

Faced with lower consumption and increased imports from offshore, North American producers reduced production by a further 12% from the cutback levels of 1982. Prices were under pressure throughout the 1982/83 fertilizer year. By June, the new pricing basis per ton of muriate was down to $55 or $12 lower than a year earlier.

With better crop prices and lower grain inventories, the outlook improved during the fall season and prices rose from a low of $45 in August to $65 in December.

Markets

Forest Products Marketing

1983 was a year of improving fortunes for the forest products industry. Overall growth in production, operating rates and sales volumes was impressive. While some sectors of the industry reported sharp increases in profitability, most areas were only moving towards generating positive returns at year-end.

Going into 1983 virtually all forest products were in a serious oversupply position. The very strong recovery of the U.S. economy during the first half reduced and, for some products, eliminated this imbalance.

The outlook for forest products for 1984 is for a return to profitable operations in most grades. While the pace of expansion will slow in the United States, overseas markets will continue to strengthen. Demand and supply will be in rough balance and moderate price improvement is forecast over the year.

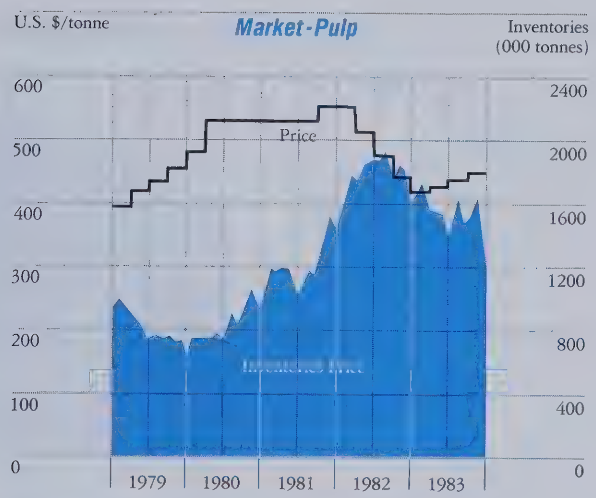
Noranda-owned and associated forest products companies are among the world leaders in production of lumber, pulp and newsprint and are significant suppliers to plywood, waferboard, printing and writing paper and linerboard markets. The operating companies sell most of their products directly through sales offices, agencies and distribution centres in North America and overseas. Northwood Mills Ltd. also acts as the marketing company for some of the company production in wood products and market-pulp.

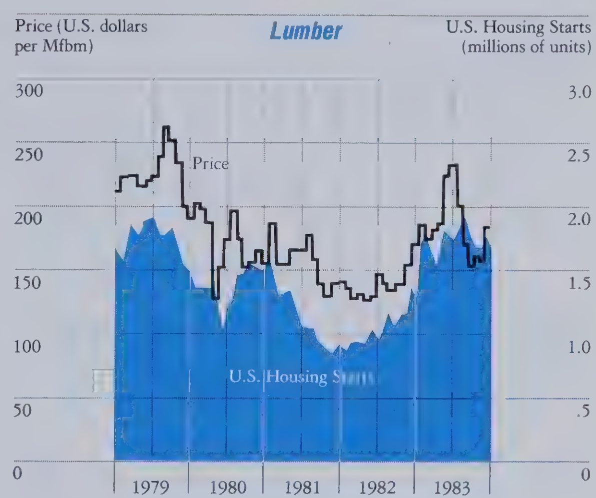
U.S. Balance *(000 tonnes)*	*1981*	*1982*	*1983 Estimated*
Consumption	10,164	10,115	10,590
Closing inventory	1,477	1,269	1,194

Newsprint consumption in the United States rose by 5% in 1983. By historical standards, this was a substantial year-over-year increase. It was a reflection of higher advertising expenditures in the U.S. and a resultant increase in the advertising lineage sold by newspapers.

Operating rates for newsprint producers did increase during the year, but overcapacity remained. Export markets were relatively weak because of competition from other supply regions, particularly Scandinavia.

Some price increases were obtained in the U.S. late in the year and some of the excess capacity was switched to groundwood printing papers. Newsprint producers can expect further recovery through 1984 in the U.S. but, in Europe in particular, the market will remain very competitive.





Norscan Balance *(000 tonnes)*	*1981*	*1982*	*1983 Estimated*
Production	16,084	13,483	15,535
Shipments	15,759	13,398	15,921
Closing Inventory	1,428	1,597	1,194

Demand for market-pulp improved steadily through 1983. The resurgence was led by the U.S. market. Improved paper mill operating rates during the first half led to sharply increased market-pulp usage. In Europe, the largest pulp market, recovery was slower but by year-end demand had reached previous highs. Overall world market-pulp shipments were higher in 1983 than in any previous year.

Two factors, however, prevented 1983 from being as good a year for Canadian producers as the demand figures would indicate. The first was the increased amount of pulp available for sale. New entrants to the industry in Brazil, the United States, Europe and a number of other countries started up during the recession and absorbed much of the growth in the overall market. The second major factor was the increasing value of the U.S. dollar vis-a-vis European currencies. This severely eroded Canada's competitive position within the market-pulp industry and also adversely affected the profitability of European pulp buyers. Even in the U.S. market, price increases were confined to modest amounts for only a limited number of grades.

Signs that 1984 would be a better year for pricing were however clear by year-end. Producer inventories were down significantly. Paper prices were moving upward in Europe and the strength of the U.S. dollar had eased and, with little new capacity scheduled to come into the market during 1984, supply and demand were in reasonable balance.

	1981	*1982*	*1983 Estimated*
U.S. Housing Starts (millions)	1.10	1.07	1.70
U.S. Lumber Consumption (billion fbm)	31.1	29.3	35.4

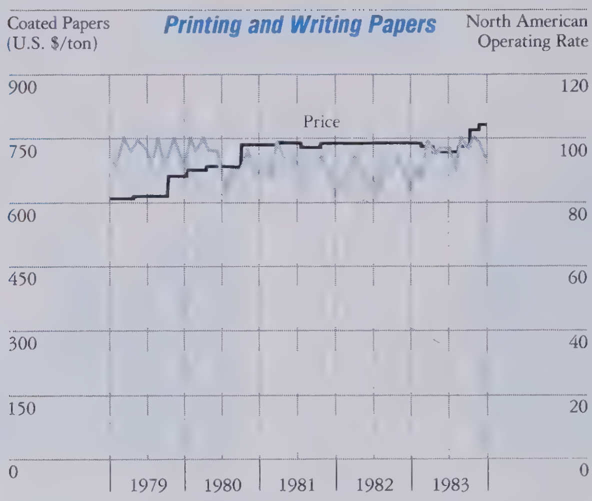
After a very strong first half of 1983, the persistent overcapacity in the North American lumber industry caused a substantial retreat in prices to the point where lumber prices at year-end 1983 were only slightly above year-end 1982.

Lower interest rates stimulated new housing construction in the U.S. and for the year housing starts were 62% above 1982. This remarkable recovery in construction sent lumber prices and volumes sharply upward. This high level of activity encouraged producers to increase production and to restart mills idled during the depths of the recession. This surge in supply exceeded the requirements of the North American market and the high dollar and less buoyant overseas markets prevented exports from absorbing the surplus.

By September prices had fallen by 30% and remained relatively flat for the remainder of the year.

Overcapacity will continue to be a problem for the lumber industry in 1984. Some improvement in overseas markets will likely be offset by a slowing of construction activity in the U.S.

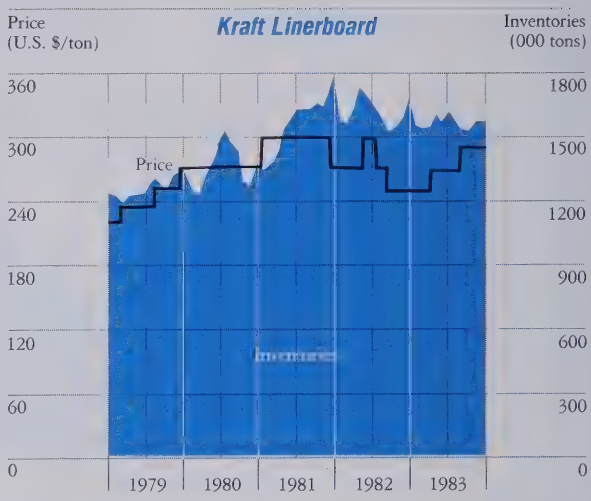
Markets



North American Balance *Million tons*	*1981*	*1982*	*1983 Estimated*
Capacity	17.4	19.0	19.4
Shipments	16.5	16.5	18.3
Operating Rate %	95	87	94

The sector of the forest products industry that turned around more strongly than any other in 1983 was printing and writing papers. The economic growth in North America was led by consumer spending and as advertising expenditure rose, demand for printing paper recorded some of the largest year-over-year increases ever. By the fall, operating rates were close to capacity and prices were moving sharply upwards.

Full operations, strengthening prices and strong demand are forecast to continue.



U.S. Balance *(000 tonnes)*	*1981*	*1982*	*1983 Estimated*
Production	14,536	13,498	14,706
Capacity	15,340	15,928	15,963
Utilization Rate	95%	85%	92%

Unbleached kraft linerboard is a major component in corrugated packaging. As with other forest products, demand in the United States increased sharply during 1983 but contrary to the experience of most other industry sectors export sales of linerboards were also at high levels.

The outlook for 1984 is for further gains in shipments, both export and domestic.

Exploration and Development

Metals and Minerals

Noranda Exploration, based in Toronto, continued its world-wide search for economic mineral deposits from 27 offices. The main efforts continued in Canada from 15 field offices, in the U.S.A. from 7 centres and in Australia from the main office in Sydney and three supporting field offices. Elsewhere in exploration, Noranda was directly active on a decreasing basis only in Chile and indirectly in Ireland, Spain, Brazil and Peru through joint venture partnerships.

Expenditures *($ millions)*	*Base metals*	*Precious metals*	*Other*	*Total*
Canada	11.9	9.4	1.0	22.3
United States	3.2	9.3	.6	13.1
Australia	1.7	.4	.2	2.3
Other	.5	.2	.1	.8
	17.3	19.3	1.9	38.5
Percentage	45%	50%	5%	100%

Employees	*1982*	*1983*
Canada	168	177
International	139	105

In general, an increasing emphasis was placed on the search for viable precious metal deposits either through acquisition or exploration programs. The most important project continued to be the Noranda operated Joint Venture gold properties at Hemlo in Northwestern Ontario, where Deposit No. 1 is currently being developed for production. During 1983, Noranda Exploration's efforts resulted in the recognition of this deposit as a world class orebody.

Elsewhere in Canada, a total of 223 projects were active in the two Territories and eight of the ten Provinces. In addition to the Toronto Office, seven district offices were maintained to administer the field activities which consisted mainly of airborne geophysical surveying, ground geological, geochemical and geophysical surveys, diamond drilling, surface and underground sampling. Of the more important Noranda operated projects, 64 were diamond-drill tested with a total of 445,872 feet, including the Golden Giant ore definition program.

In the Maritime provinces, a total of $1.7 million was expended on base and precious metal exploration on 19 active projects and on 3 additional projects as joint ventures with Abitibi-Price Inc. and Brunswick Mining and Smelting Corporation. Noranda also managed exploration work on 15 additional base metal projects for B.M. & S. in New Brunswick.

In Quebec, a total of $4.2 million was spent seeking base metal deposits around Noranda's existing production centres and precious metal deposits elsewhere for diversification. Noranda funded a total of $2.5 million to locate new ore deposits in the Matagami District and a lesser amount in the Noranda and Gaspé areas to locate acceptable grade sources of smelter feed.

In Ontario, $6.3 million was expended, not including expenditures on behalf of the 50 percent controlled Joint Venture in the Hemlo Area. On other properties in the Hemlo Area and elsewhere, mainly around the Kirkland Lake, Timmins, Kenora and Red Lake mining camps, 26 projects were active, searching for precious metal deposits. Along several greenstone belts throughout northern Ontario, 32 projects were active in the search for poly-metallic deposits.

In the Prairie Provinces, Noranda spent a total of $1.3 million on two projects in Saskatchewan seeking mainly uranium, and four projects in Manitoba searching mainly for base metal mineralization. Noranda continues to hold a one-third interest in Eldorado's Eagle Point deposit in northern Saskatchewan.

In the Northwest Territories expenditures were reduced to $1.1 million as six projects were active including three for base metals, two for precious metals and one uranium project. In the Courageous Lake area where Giant Yellowknife Mines Limited recently commenced production from their Salmita mine, Noranda, in a joint venture with Getty Oil, explored a large gold property where significant results were encountered during 1983. In the Hackett-Back River area, Noranda tested new gold occurrences in a joint venture with the Pez Group of Vancouver. In the Yukon Territory $0.9 million was spent mainly to further diamond drill test Noranda's wholly owned Marn gold-copper-tungsten deposit near Dawson.

Exploration

In British Columbia, a total of $4.3 million was spent on fourteen precious metal and twelve base metal projects throughout the province. An underground sampling program was completed by Noranda on Blackdome's gold prospect near Williams Lake. On the Sylvester K property near Greenwood, under option to Kettle River Resources, significant gold mineralization was discovered by surface trenching and further tested by diamond drilling.

In the U.S.A., approximately 71% of the budget was spent on precious metals generative programs and projects and some $632,000 on development and inventory properties. The Goldfield property, Nevada, jointly owned with Pacific Gold and Uranium, was farmed out to the Southern Pacific Land Company, which is making it ready for production. Work on Noranda's Tecoma, Utah, small open pit gold property has progressed to the point where a production decision will be required in 1984.

Reserves were confirmed on the Mud Creek placer property, Alaska. The property will be farmed out in 1984.

Fifteen new land positions were generated from ten reconnaissance programs; one is a polymetallic target, the rest are precious metals.

Outside North America, Noranda maintained active programs in South America and Australia whereas field activities were decreased in Central America and Europe. A total of $3.1 million was expended outside North America of which $2.3 million was in Australia. From the head office in Sydney and the three supporting field offices, 32 projects were active of which 11 were diamond drilled for a total of 30,000 feet. The balance was spent in South and Central America on four active projects and in Europe on a gold project in Spain.

Development

Construction is underway to place the Hopewell Land phosphate property into production in late 1984. Production is planned to be at the rate of 500,000 tons per year.

With the Environmental Impact Statement completed, a feasibility study is underway to determine the economics of putting the Greens Creek property into production. This gold-silver-lead-zinc deposit is a joint venture with Noranda holding 33.8% interest and operator responsibilities.

Oil and Gas

Financial *$ millions*	*1982*	*1983*
Noranda's share		
Sales	86.6	103.3
Operating profit	24.7	38.1
Average net assets employed	323.2	342.8
Capital expenditures	64.6	26.5
Employees	186	212

At the beginning of 1983, the Canadian Hunter joint venture was owned 87% by Noranda and 13% by Agnew Lake. Petromark and Domtar exercised their right at the beginning of the year to convert their interests in the joint venture to working interests in existing properties.

Daily sales of gas for the joint ventures averaged 112 million cubic feet. Recognized additions to reserves, in two principal contracts at Elmworth and Wapiti, were partially offset by the reduced size of the joint venture and a further deterioration in gas markets. Purchases by TransCanada Pipelines Limited, the major buyer, averaged 47% of contract quantities during the 1982/83 contract year, down from 62% in the previous contract period. In the last two months of the year, which are the first two months of the 1983/1984 contract year, purchasers nominated to buy at higher than the recent historical levels for corresponding months. Much of the system delivered at, or near peak demand. TCPL nominations are expected to have recovered to at least 53% of contract quantities for the current contract year.

Crude oil and liquids production averaged 800 barrels per day.

Industry drilling activity in Canada and the U.S. was relatively unchanged from 1982. The Hunter joint ventures were involved in 42 wells and the results are as follows:

	Oil	*Gas*	*D&A*	*Total*
Canadian Hunter (87%)				
Working Interest	3	9	5	17
Royalty Interest	11	1	3	15
American Hunter (85%)				
Working Interest	3	1	3	7
Royalty Interest	–	–	3	3
Total	17	11	14	42

Canadian exploration activity was diversified somewhat over the course of the year. New oil prospects are being pursued in the three western provinces in addition to the continuing gas and oil exploration programs in the Deep Basin of Alberta and British Columbia. The exception to the western Canada focus was Canadian Hunter's participation in the Chevron et al Cape Spencer abandoned wildcat in the Bay of Fundy. Company participation in this well earned a 10.5% interest in 2,608,550 acres.

In the United States, significant exploration programs are proceeding in Texas, Utah, California, and Wyoming.

Ethane and heavier liquids extraction facilities at both Elmworth and Wapiti have been granted all necessary approvals. Construction completion is expected by mid-1985. Hunter's share of production, in the order of 9,200 barrels per day from both plants, will be sold to Esso for the initial seven years.

Canadian Hunter recently signed an interest-earning agreement with Dome Petroleum. Under its terms Hunter can earn, from Dome, up to 15% of the petroleum and natural gas rights, and 15% of oil sands rights underlying a 10-township block within the Primrose Air Weapons Range, located in east central Alberta. This in-situ recovery project is in the early pilot evaluation stage, which can lead to significant commercial production by the end of the decade.

Hunter's land position at year-end was:

	Gross Acres	*Net Acres*
Canada		
Leases	2,162,800	943,900
Licences & Permits	3,392,050	975,400
U.S.A.		
Fee/Federal/State	1,135,350	969,200
Total	6,690,200	2,888,500

Noranda's share of Hunter remaining reserves at year-end (before royalty interest) is as follows:

	Oil and Natural Gas Liquids (millions of barrels)	*Marketable Natural Gas (billions of cubic feet)*
Proven	41.9	903.7
Probable	34.5	542.2
Proven and Probable	76.4	1,445.9

Proven reserves are volumes that are considered recoverable with a high degree of certainty under anticipated operating and economic conditions. Proven reserves may be assigned to both developed and undeveloped lands.

Probable reserves are volumes that may be recovered from lands in the vicinity of proven reserves but where there is some degree of geological, engineering, operational or economic risk.

Panarctic Oils (3.5%) drilled and abandoned three offshore wells and one onshore well during the year. Oil and gas were encountered at Cisco K-58 and Cape MacMillan K-15. No significant hydrocarbons were encountered at Grenadier A-26 or Marryatt K-10.

Noranda's 1983 oil and gas expenditures were as follows:

($ millions)	*Land Acquisition & Exploration*	*Oil and Gas Development*	*Total*
Canadian Hunter	32.1	5.4	37.5
American Hunter	17.9	4.2	22.1
Panarctic	.5	–	.5
Total	50.5	9.6	60.1

The Hunter joint venture expenditures are being modestly increased in response to improved economics for "new" oil and in anticipation of new gas markets within two to three years.

Noranda's gross investment on these oil and gas ventures has been $514 million. Its share of net revenue from production operations has been $209 million, with a resulting net investment of $305 million at year-end 1983.

Research and Development

Noranda's commitment to research and development reflects the conviction that new technology has real potential for improving the competitive position of all the Company's businesses. The Noranda Research Centre focuses on the R & D needs of Noranda's Metals and Minerals and Manufacturing Groups. The Forest Products sector is primarily served by the research departments of MacMillan Bloedel, Fraser and Noranda's partner in Northwood Pulp. These efforts are supplemented by Noranda Group participation in industry-sponsored research and development associations.

Noranda Research Centre

The primary thrust is to support Noranda's existing mining, metallurgical and manufacturing businesses. The research and development program addresses both shorter term operating needs and longer term opportunities, involving research, operations and marketing personnel. Research which could lead to new businesses for Noranda is also an important function of the Research Centre in its role as a corporate laboratory.

A review conducted during the year has shown that Noranda's approach to research and development has been successful. A sampling of projects representative of the Research Centre's activities during the past five years, accounting for about 50 percent of the total research expenditures during that period, was examined for identifiable financial benefits accruing to Noranda's operations. The total benefits were found to represent a before-tax return of nearly triple the research investment.

The Mining Technology Division was officially inaugurated in April. Although still in a start-up phase, the Division has established a close interaction with Noranda Group mines and is actively evaluating and pursuing a number of technological opportunities.

A systematic study was initiated to improve the performance of grinding circuits in Noranda Group concentrators. This long-term co-operative program has already resulted in a significant improvement in circuit efficiency at Mattabi.

In the area of copper technology, a new, more economical method of processing copper refinery slimes was successfully piloted at the CCR Division. Work continued on the treatment of dust collected at the Horne Division smelter and a final process selection is near at hand. A collaborative effort resulted in substantial reverberatory furnace fuel savings at the Gaspé and Horne smelters. In other energy-related work, a novel pyrometer was devised to improve the temperature control of copper converters and the Noranda Process reactor.

The new anode baking furnace at Noranda Aluminum, a result of joint research on improved anode baking practice, has achieved the lowest fuel consumption in the aluminum industry. A cost saving method for fabricating thermal barriers in aluminum door and window frames developed for Norandex, and a new wire rope product for Wire Rope Industries, were readied for prototype production. A computerized method for optimizing metal rolling and tube drawing schedules is expected to find wide application in Manufacturing Group operations.

A comprehensive program to promote the use of zinc continued in collaboration with Noranda Sales and Noranda's zinc customers. The focus of this product research and market development effort is on the two largest end-use markets for zinc coatings and castings. The Research Centre's capability to conduct die-casting research was substantially strengthened with the commissioning of a production-scale die-casting machine. Significant progress was made in extending the application of the ZA family of zinc-aluminum casting alloys.

The Research Centre is exploring opportunities for by-products such as selenium and cadmium in the rapidly growing opto-electric products market. An ongoing activity is the characterization of selenium alloys produced by the CCR Division for xerographic applications.

In 1982, Electrolyser Inc. commissioned a 1.2 megawatt experimental hydrogen plant at Hydro-Quebec's Varennes research centre. This plant has now been operating successfully for over one year at better than design energy efficiency. Resulting confidence in the electrolyser modules has been the basis in 1983 for extensive project development activities in Canada and elsewhere around the world. The Generation I hydrogen cells demonstrated at Varennes are world-competitive in terms of both cost and performance. Maintenance of this position will be supported by the Canadian government, through a $1.3 million dollar contract which will cover 50 percent of research and development costs for the 30-month period which began in March 1983.

At year end, the Noranda Research Centre staff totalled 136 of whom 62 were professionals. Total spending was $8.2 million

Associations

The HDRK Mining Research Corporation, founded by three major Canadian mining companies and Noranda, completed its second year of operation. The objective of this association is to jointly undertake higher risk, longer range research in mining methods and equipment. Noranda is also a member of the Mining Industry Research Organization of Canada which is primarily concerned with the mine environment.

Noranda supports several international industry-sponsored metals research associations such as the International Copper Research Association (INCRA) and the International Lead/Zinc Research Organization (ILZRO). These agencies are responsible for carrying out innovative product and environmental research to support existing product applications and processes and to develop new opportunities for non-ferrous metals. In the past, significant assistance to the industry has resulted from environmental work, especially in cadmium and lead. Much of the current strength in the zinc market links directly back to work carried out by ILZRO. INCRA's work in support of copper is obviously vital during this current period of surplus.

The Pulp and Paper Research Institute of Canada conducts basic and applied research aimed at advancing the technology of its member companies. Highlights of its 1983 program included the development of a computer process simulation model for pulp and paper mills, a fibre curl setting method for enhancing the properties of pulp, and a new calendering technique to improve the gloss and smoothness of paperboard for food applications. Basic research was initiated on the production of industrial enzymes by genetic engineering and a study was completed to permit the more effective utilization of trees killed by insects and disease. Noranda Group forest product companies are also members of the Forest Engineering Research Institute of Canada, Forintek Canada Corp. and other associations.

Noranda Enterprise Limited

Noranda Enterprise Limited is the continuation of investment in high technology first started by Maclaren Power & Paper in the early 1970's. These investment activities have been supported and encouraged by Noranda since acquiring Maclaren in 1980.

Today, the focus of Noranda Enterprise is equity participation in innovative technologies, and since the first investment in a fledgling laser company, other substantial equity participation has followed, encompassing such diverse areas of advanced technology as computer software, biotechnology, and office automation.

Environmental Control

The major environmental issue confronting the Noranda Group in 1983 continued to be acid rain. Noranda has responded by completing the evaluation of a new sulphur dioxide containment process at the Horne smelter, by re-examining and updating previous technical feasibility studies and by maintaining active dialogue with the public, governmental agencies, researchers and other industry. It also brought on stream a highly efficient sulphuric acid plant for the Canadian Electrolytic Zinc expansion.

Very significant reductions in sulphur dioxide emissions have occurred since 1965 with the installation of increasingly efficient sulphuric acid plants, with a declining sulphur content in concentrates and with a decreasing concentrate throughput. Sulphur dioxide emissions - one of the acid rain precursors - have been decreased by 275,000 tonnes per year in 1983 in comparison to 1965 – a 35 percent improvement. Of the total sulphur entering smelting facilities, 45 percent is fixed primarily as sulphuric acid. Presently Noranda is the largest metallurgical sulphuric acid producer in Canada with an operating capacity of 740,000 tonnes per year.

Demonstration of a proprietary sulphur dioxide recovery process using asbestos tailings was completed at the Horne smelter. The process was invented by Société Nationale de l'Amiante. The results show that it is not suitable for smelter gas recovery and that other means of emission reduction will have to be identified. Several options are being discussed with the Quebec Ministry of the Environment. One of the options includes an acid plant to treat the Noranda reactor gas. This may result in recovering about 40 percent of the Horne smelter sulphur dioxide emissions. Preliminary cost estimates associated with this alternative consist of $150 million capital in current dollars including adjustments for inflation, interest on borrowed money and contingencies, and $14.4 million in annual operating losses depending primarily upon the sulphuric acid market conditions. An orderly development of this market may reduce the loss.

An unexpected seepage of tailings water from a low permeability dam at the Noranda Grey Eagle mine in northern California was identified and quickly contained. Any discharge into the watershed would have been a violation of State permit conditions and would have resulted in closure. A comprehensive research and control technology study was initiated and implementation of a remedial plan has been approved by the regulatory agency.

Intensive biological surveys of the York River were continued to evaluate benthos and juvenile salmon populations subsequent to the June 1982 accidental loss of acid from Mines Gaspé. Centre and lower sections of the York River contained exceptionally high salmon fry densities confirming an unaffected, healthy biological community. Few salmon fry were evident in the upper section of the River downstream from Mines Gaspé. However, benthic fauna have almost recovered to comparable pre-spill conditions and the presence of significant numbers of salmon parr indicates good water quality and a productive and sufficient food base.

Environmental baseline surveys and impact analyses were completed for the Hemlo project involving water, air, soil, sediment, vegetation, land use and aquatic biota. In addition, testing of mine rock, ore, tailings and mill effluents were undertaken on a pilot plant scale to identify potential environmental interests. These factors stimulated the investigation and selection of efficient control technologies for the design of the wastewater treatment plant, the tailings retention pond and its seepage control system. Similar attention was directed toward in-plant noise attenuation and industrial hygiene conditions.

Substantial environmental capital expenditures were allocated in the forestry sector. A $33.9 million modernization at the James Maclaren Industries Thurso mill will significantly reduce air pollution levels as well as biological oxygen demand and suspended solids in wastewater. Fraser will, through process changes and the installation of a new primary clarifier at the Atholville mill, decrease suspended solids in their effluent to within provincial requirements. The cost is $6 million. Improvements to air pollution emissions have been effected with the installation of new recovery and hog fuel boilers.

While production at a number of mining operations has been curtailed indefinitely, environmental data gathering continued. Where necessary, full treatment systems have been maintained to protect water quality.

Capital expenditures which will enhance air, water, industrial hygiene and waste disposal conditions and funding for central environmental research totalled $60 million in 1983 and $108 million in 1982.

Operations – Metals and Minerals

Financial and Employment

(all financial figures in $ millions)

			1982	1983
Alpha	100% Basis	Sales	154.0	144.8
		Average net assets employed	524.6	481.8
	Noranda's share	Sales	131.1	129.4
		Average net assets employed	459.9	383.2
		Capital expenditures	59.4	17.9
	Employees	Canada	1,204	930
		U.S.A.	415	170
Beta	100% Noranda	Sales	294.2	253.2
		Average net assets employed	269.8	252.7
		Capital expenditures	40.4	11.1
	Employees		3,113	2,950
Delta	100% Basis	Sales	499.5	523.5
		Average net assets employed	537.9	530.9
	Noranda's share	Sales	438.3	460.9
		Average net assets employed	454.2	435.1
		Capital expenditures	60.2	18.9
	Employees		4,363	3,970
Gamma	100% Basis	Sales	164.0	172.7
		Average net assets employed	135.5	137.3
	Noranda's share	Sales	135.9	145.2
		Average net assets employed	88.4	103.7
		Capital expenditures	7.0	66.9
	Employees		2,015	1,990
Other	100% Basis	Sales	39.1	66.7
		Average net assets employed	331.6	462.2
	Noranda's share	Sales	39.1	66.7
		Average net assets employed	330.6	461.2
		Capital expenditures	10.2	5.0
Total	Noranda's share	Operating profit	11.1	78.5

Smelting and Refining Production

		1982	1983
Horne Smelter	Copper content of anodes produced (000 tons)	234	195
Gaspé Smelter	Copper (000 tons)	54	34
	Sulphuric Acid (000 tons)	117	73
CCR Refinery	Copper (000 tons)	267	370
	Silver (000 ounces)	14,226	22,446
	Gold (000 ounces)	364	525
Canadian Electrolytic Zinc (90.2% direct 4.9% indirect)	Zinc (000 tons)	161	241
	Cadmium (000 lbs.)	508	858
	Sulphuric Acid (000 tons)	197	386
Brunswick Smelter (64.1%)	Lead (000 tons)	67	64
	Silver (000 ounces)	3,175	3,646
	Sulphuric Acid (000 tons)	197	197

Mine Production

			Ore Treated (000 tons)	Metal contained in concentrate: Copper tons	Zinc tons	Lead tons	Silver (000 oz)	Gold ounces	Molybdenum (000 lbs)	Muriate of Potash (000 tons)	Sodium Sulphate (000 tons)
Alpha	*Babine–Bell	1983	–	–	–	–	–	–	–	–	–
		1982	3,720	11,870	–	–	65	12,000	–	–	–
	–Granisle	1983	–	–	–	–	–	–	–	–	–
		1982	2,073	7,460	–	–	60	4,360	–	–	–
	*Boss Mountain	1983	33	–	–	–	–	–	113	–	–
		1982	445	–	–	–	–	–	1,189	–	–
	*Brenda Mines	1983	9,023	10,850	–	–	187	–	4,889	–	–
	(49.9%)	1982	10,455	11,950	–	–	185	–	5,405	–	–
	Central Canada	1983	2,531	–	–	–	–	–	–	970	–
	Potash	1982	1,821	–	–	–	–	–	–	689	–
	Goldstream	1983	324	9,030	191	–	86	–	–	–	–
		1982	–	–	–	–	–	–	–	–	–
	Noranda Grey Eagle	1983	154	–	–	–	36	27,320	–	–	–
		1982	–	–	–	–	–	–	–	–	–
	Noranda Lakeshore	1983	1,297	18,760	–	–	–	–	–	–	–
	Mines	1982	1,668	22,800	–	–	–	–	–	–	–
	*Northland Gold	1983	–	–	–	–	–	190	–	–	–
	(62.5%)	1982	–	–	–	–	–	1,780	–	–	–
	Alberta Sulphate	1983	–	–	–	–	–	–	–	–	43
		1982	–	–	–	–	–	–	–	–	42
Beta	*Mines Gaspé	1983	–	–	–	–	–	–	–	–	–
		1982	6,489	26,830	–	–	–	–	926	–	–
	Chadbourne	1983	303	–	–	–	–	30,200	–	–	–
		1982	309	–	–	–	–	25,300	–	–	–
	*Mines Gallen	1983	–	–	–	–	–	–	–	–	–
	(50%)	1982	111	–	4,000	–	28	1,350	–	–	–
Delta	*Heath Steele Mines	1983	496	3,390	13,930	3,410	441	2,840	–	–	–
	(75% Little River Joint Venture)	1982	1,542	9,900	47,000	11,000	1,239	6,730	–	–	–
	Matagami	1983	1,219	9,050	53,400	–	229	4,900	–	–	–
		1982	1,299	10,600	70,600	–	211	4,800	–	–	–
	Brunswick Mining	1983	3,760	5,300	270,740	88,740	6,290	–	–	–	–
	and Smelting (64.1%)	1982	3,997	6,200	286,700	98,500	7,014	–	–	–	–
Gamma	Geco	1983	1,375	20,190	40,810	540	1,344	–	–	–	–
		1982	1,489	21,720	45,240	570	1,369	–	–	–	–
	Lyon Lake	1983	457	4,790	37,770	1,630	1,928	–	–	–	–
		1982	261	1,420	18,010	870	756	–	–	–	–
	F Group	1983	78	290	7,610	170	120	–	–	–	–
		1982	161	670	13,870	240	141	–	–	–	–
	Mattabi Mines	1983	494	950	34,590	3,090	1,172	–	–	–	–
	(60%)	1982	414	860	22,930	1,450	921	–	–	–	–
	Pamour Porcupine	1983	1,306	140	–	–	58	101,970	–	–	–
	Mines (48.7%)	1982	1,637	350	–	–	72	119,520	–	–	–
Totals		1983	22,850	82,740	459,041	97,580	11,891	167,420	5,002	970	43
		1982	37,891	132,630	508,350	112,630	12,061	175,840	7,520	689	42
Noranda's Direct Interest		1983		74,100	344,530	63,630	8,930	114,330	2,553	970	43
		1982		121,420	382,500	73,940	8,720	111,500	4,812	689	42

*Mining operations suspended

Mineral Inventories

		1982 (000 tons)	1983 (000 tons)	Copper %	Zinc %	Lead %	Silver oz. per ton	Gold oz. per ton	Molyb-denum %	Muriate of Potash K_2O%	Sodium Sulphate (000 tons)
Alpha	*Babine – Bell (revalued)	39,438	23,586	0.50	–	–	–	–	–	–	–
	– Granisle	15,614	15,614	0.44	–	–	–	–	–	–	–
	*Boss Mountain	4,632	4,599	–	–	–	–	–	0.140	–	–
	*Brenda Mines	121,000	109,000	0.15	–	–	–	–	0.032	–	–
	Central Canada Potash	488,700	485,160	–	–	–	–	–	–	27.0	–
	Goldstream	4,343	4,002	3.69	2.70	–	0.51	–	–	–	–
	Noranda Grey Eagle	973	687	–	–	–	0.64	0.18	–	–	–
	*Noranda Lakeshore Mines										
	– Oxide	15,000	13,100	1.16	–	–	–	–	–	–	–
	Sulphide tactite	8,900	8,900	1.35	–	–	–	–	–	–	–
	Porphyry	41,000	41,000	0.65	–	–	–	–	–	–	–
	Northland Gold – cubic yards (000)	4,000	4,700	–	–	–	–	0.0054	oz. cu. yd.	–	–
	Alberta Sulphate – recoverable product	496	460	–	–	–	–	–	–	–	460
Beta	*Mines Gaspé										
	Needle Mountain										
	– proven	3,887	3,887	1.26	–	–	–	–	0.047	–	–
	Copper Mountain										
	Sulphide – proven	35,008	35,008	0.37	–	–	–	–	0.016	–	–
	– probable	43,107	43,107	0.48	–	–	–	–	0.023	–	–
	Oxide – proven	22,968	22,968	0.44	–	–	–	–	–	–	–
	Murdochville Project										
	– proven	–	4,789	2.94	–	–	0.49	–	–	–	–
	Chadbourne	614	718	–	–	–	–	0.12	–	–	–
	*Mines Gallen	1,605	1,593	–	5.3	–	0.76	0.03	–	–	–
	Remnor – proven	–	712	–	–	–	–	0.18	–	–	–
	– probable	–	285	–	–	–	–	0.18	–	–	–
Delta	Brunswick Mining and Smelting	112,109	113,588	0.33	9.81	3.68	2.82	–	–	–	–
	*Heath Steele	27,372	26,474	1.25	4.26	1.41	1.71	–	–	–	–
	Matagami – Mattagami Lake	5,000	4,135	.48	5.60	–	.60	0.01	–	–	–
	Norita	2,519	2,641	2.22	3.40	–	0.68	0.02	–	–	–
Gamma	Geco	17,682	16,347	1.83	3.45	–	1.34	–	–	–	–
	Lyon Lake	2,385	1,888	1.44	8.15	0.89	4.39	–	–	–	–
	F – Group	200	–	–	–	–	–	–	–	–	–
	Mattabi Mines	4,080	3,716	0.55	7.09	0.82	2.38	–	–	–	–
	Pamour Porcupine Mines	2,700	2,714	–	–	–	–	0.096	–	–	–
	Hemlo	–	23,868	–	–	–	–	0.28	–	–	–

Note: Tonnage to be mined will be determined by future mineral prices, operating costs and taxes.
*Mining operations suspended

Other Associates

Financial and Employment

$ – millions			1982	1983
Kerr Addison (49%)		Sales	55.0	47.5
		Noranda's share Operating profit	5.3	6.0
Tara Exploration (49%) (75% Tara Mines)		Sales	75.1	94.2
		Noranda's share Operating profit (loss)	(1.9)	2.0
Placer (31.0% direct)		Sales	272.9	263.5
		Noranda's Share Operating profit (loss)	(8.6)	3.4
Total	100% Basis	Sales	403.0	405.2
		Average net assets employed	1,225.1	1,300.6
	Noranda's Share	Sales	154.2	150.7
		Average net assets employed	157.1	193.7
		Operating profit (loss)	(5.2)	11.5
Employees		Canada	1,520	1,440
		International	1,250	1,440

Mineral Inventories

December 31	(000 tons) 1982	(000 tons) 1983	Grade: Copper %	Zinc %	Lead %	Silver (oz per ton)	Gold (oz. per ton)	Molybdenum %
Kerr Addison	696	928	–	–	–	–	0.121	–
Tara Exploration (Tara Mines)	58,353	58,968	–	9.31	2.60	–	–	–
Placer Development								
*Endako	222,660	222,400	–	–	–	–	–	0.08
Equity Silver Mines	26,000	23,600	–	–	–	2.85	0.024	–
Gibraltar	257,600	207,200	0.30	–	–	–	–	–
Golden Sunlight	–	24,000	–	–	–	–	0.05	–
**Marcopper Mining	314,700	63,700	0.44	–	–	–	–	–
Real de Angeles	–	74,700	–	–	–	2.20	–	–
Cortez Gold Mines	4,077	2,700	–	–	–	–	0.08	–

Note–Tonnage to be mined will be determined by future metal prices, operating costs and taxes.
*Mining operation suspended.
**1983 excludes estimated 200,000,000 tons of mineralized material at an average grade of 0.57% copper in the San Antonio zone.

Other Associates

Mine Production

		Year	Ore treated (000 tons)	Copper (tons)	Zinc (tons)	Lead (tons)	Silver (000 oz.)	Gold (ounces)	Molybdenum (000 lbs.)
				Metal contained in concentrate					
* **Kerr-Addison** (49%)		1983	332	–	–	–	–	42,000	–
		1982	662	–	8,680	5,680	–	54,610	–
Tara Explorations (49%) (75% Tara Mines)		1983	2,600	–	204,710	36,990	–	–	–
		1982	1,961	–	166,400	29,600	–	–	–
** **Craigmont Mines** (19.7%)		1983	–	–	–	–	–	–	–
		1982	342	2,850	–	–	–	–	–
Placer Development (31%)	Endako***	1983	–	–	–	–	–	–	–
		1982	3,249	–	–	–	–	–	2,815
	Equity Silver Mines (70%)	1983	2,400	8,906	–	–	4,958	28,000	–
		1982	2,284	7,560	–	–	6,837	29,664	–
	Gibraltar (71.9%)	1983	14,900	30,746	–	–	–	–	960
		1982	14,744	34,500	–	–	–	–	1,598
	Golden Sunlight	1983	1,700	–	–	–	–	79,700	–
		1982	–	–	–	–	–	–	–
	Marcopper Mining (39%)	1983	11,600	38,413	–	–	–	–	–
		1982	11,396	40,450	–	–	–	–	–
	Real de Angeles (34%)	1983	4,100	–	24,140	30,672	7,761	–	–
		1982	–	–	–	–	–	–	–
	Cortez Gold Mines (39.6%)	1983	1,100	–	–	–	–	47,357	–
		1982	1,534	–	–	–	–	24,620	–
Totals		1983	38,732	78,065	228,850	67,662	12,719	197,057	960
		1982	36,172	85,360	175,080	35,280	6,937	108,894	4,413
Noranda's direct interest		1983		13,537	77,775	16,827	1,894	57,177	214
		1982		15,810	64,702	13,201	1,602	32,209	1,308

*Includes Mogul of Ireland in 1982 **Closed down in 1982 ***Operations suspended in 1982

Forest Products Financial

– $ millions

		Operating Profit Noranda's Share	Sales 100%	Sales Noranda's Share	Average Net Assets Employed 100%	Average Net Assets Employed Noranda's Share	Capital Expenditures Noranda's Share	Employees
James Maclaren Industries	*1983*	13.2	164.9	164.9	303.2	303.2	58.3	3,930
	1982	19.4	139.4	139.4	279.9	279.9	28.8	3,650
Fraser (63%)	*1983*	7.2	435.9	435.9	474.9	416.5	93.9	3,620
	1982	4.1	397.6	397.6	381.3	323.4	119.6	3,410
Northwood Pulp and Timber (50%)	*1983*	(11.9)	291.4	145.7	544.0	70.7	—	2,450
	1982	(10.8)	175.3	87.7	481.5	81.1	—	2,000
MacMillan Bloedel (49%)	*1983*	(3.3)	2,044.1	1,020.0	1,975.5	629.9	—	16,270
	1982	(57.7)	1,843.1	919.7	2,005.3	637.2	—	17,280
Other	*1983*	(1.4)	315.3	181.0	83.7	38.7	—	280
	1982	(10.7)	273.9	165.9	73.1	33.4	—	280
Totals	*1983*	3.8	3,251.6	1,947.5	3,381.3	1,459.0	152.2	26,550
	1982	(55.7)	2,829.3	1,710.3	3,221.1	1,355.0	148.4	26,620

Manufacturing Financial

		Operating Profit Noranda's Share	Sales 100%	Sales Noranda's Share	Average Net Assets Employed 100%	Average Net Assets Employed Noranda's Share	Capital Expenditures Noranda's Share	Employees
Toronto Group	*1983*	5.6	1,094.5	848.0	482.6	482.6	31.6	5,720
	1982	16.3	1,202.0	852.8	435.5	435.5	61.3	5,290
Montreal Group	*1983*	(0.9)	261.5	238.2	129.4	97.3	3.4	2,100
	1982	(3.0)	230.3	205.9	139.0	108.7	4.3	2,070
Cleveland Group	*1983*	10.5	553.5	553.5	747.5	747.5	25.5	2,840
	1982	(27.5)	447.6	447.6	608.7	608.7	206.9	2,210
Totals	*1983*	15.2	1,909.5	1,639.7	1,359.5	1,327.4	60.5	10,660
	1982	(14.2)	1,879.9	1,506.3	1,183.2	1,152.9	272.5	9,570

Production

Forest Products

	Year	Lumber MMfbm	Panel Products MMsq. ft. 1/16"	Market Pulp (000 tons)	Newsprint & Paper (000 tons)	Containerboard (000 tons)
James Maclaren Industries	*1983*	18	796	120	163	–
	1982	11	524	95	165	–
Fraser	*1983*	56	–	3	484	31
	1982	39	–	17	442	26
Northwood Pulp and Timber	*1983*	608	2,175	405	–	–
	1982	341	1,923	213	–	–
MacMillan Bloedel	*1983*	822	3,454	407	869	550
	1982	635	2,628	359	813	363
Totals	*1983*	1,504	6,425	935	1,516	581
	1982	1,026	5,075	684	1,420	389
Noranda's Share	*1983*	767	3,606	527	904	294
	1982	520	2,779	388	846	195

Manufacturing

		Year	Metal Consumption (tons)		Year	Prime Product Shipped (tons)
Toronto Group	Canada Wire	*1983*	99,700			
		1982	87,700			
Montreal Group	Noranda Metal	*1983*	34,500	Norcast	*1983*	66,900
		1982	27,500		*1982*	53,700
			Primary Aluminum Produced			
Cleveland Group		*1983*	167,000	Aluminum	*1983*	217,100
		1982	127,000		*1982*	169,800

Accounting Policies

Basis of presentation of financial statements
The accompanying financial statements are prepared in accordance with accounting principles generally accepted in Canada and include the accounts of Noranda Mines Limited (the Company) and all of its subsidiaries (Noranda). Interests in associated companies in which it has significant influence but not majority share ownership are accounted for on the basis of cost plus equity in undistributed earnings since the dates of investment. The difference between the cost of the shares of associated companies and the underlying net book value of the assets is amortized over the life of the assets to which the difference is attributed.

Certain subsidiary and associated companies own shares in the Company. The Company's pro rata interest in the carrying value of such shares has been deducted from shareholders' equity. Similarly, the Company's earnings per share have been calculated on the number of shares outstanding after reduction for such intercompany holdings.

Translation of foreign currencies
The accounts of self sustaining foreign subsidiaries are translated using the current rate method, under which assets and liabilities are translated at the exchange rate prevailing at the year end, and revenues and expenses at average rates of exchange during the year. Gains or losses on translation are not included in the consolidated statement of earnings but are deferred and shown as a separate item in the shareholders' equity. Gains or losses on foreign currency transactions that are designated as hedges of a net investment in self sustaining foreign subsidiaries are reported in the same manner as translation adjustments.

The accounts of integrated foreign subsidiaries are translated as follows: current assets and liabilities at the exchange rate prevailing at the year end and revenues and expenses (other than depreciation) at average rates of exchange during the year. Fixed and other long term assets are translated at historic rates of exchange. Long term debt payable in foreign currencies is translated at the exchange rate prevailing at the year end with the resulting adjustment being amortized over the life of the debt. Exchange gains and losses arising on the translation of the accounts are included in consolidated earnings.

Inventories
Mine products are valued at estimated realizable value and other inventories at the lower of cost (determined on a first-in – first-out or average cost basis) and replacement value.

Futures contracts
From time to time, Noranda owns futures contracts for the purchase or sale of metals and currencies not related to production. These contracts are not reflected in Noranda's accounts, beyond the amount of deposit required, until maturity date although provision is made for any estimated unrealized losses.

Depreciation and development charges
Depreciation of property, buildings and equipment and amortization of development expenditures are based on the estimated service lives of the assets calculated using the method appropriate in the circumstances, for the most part straight-line for fixed assets and unit of production for development.

Exploration
Mineral and petroleum exploration expenditures are charged against current earnings unless they relate to properties from which a productive result is reasonably certain or on which work is in process. Gains on sale or recoveries of costs previously written off are normally credited against exploration expense.

Preproduction costs
Preproduction costs including interest on major projects are deferred until the related facility achieves commercial production volume and are amortized over a reasonable period on either a straight-line or a unit of production basis.

Income taxes
Noranda follows the tax allocation method of accounting for income taxes. Under this method, timing differences between reported and taxable income result in provisions for taxes which are not currently payable. Such timing differences arise principally as a result of claiming depreciation, development, exploration and preproduction costs for tax purposes at amounts differing from those charged to reported income. Investment tax credits are reflected in earnings in the year of realization.

Interest
Interest expense is charged to earnings except interest that can be identified with a major capital expenditure program.

Capital leases
Noranda leases certain property, buildings and equipment under long-term capital leases which are recorded in the financial statements as fixed assets and long-term debt.

Pension costs
Noranda has various contributory pension plans which cover substantially all employees. Current service pension costs are charged to earnings as they accrue. Past service costs are charged to earnings at rates which, based on annual independent actuarial estimates, will fully provide for the obligations over periods not longer than those permitted by various regulatory bodies.

Consolidated Statements of Earnings and Retained Earnings

(in thousands)
Years ended December 31

Earnings

	1983	1982
Revenue		
Sales	$ 3,094,292	$ 2,793,678
Investment income	5,835	36,519
	3,100,127	2,830,197
Expense		
Cost of production	2,412,121	2,303,154
Administration, selling and general expenses	236,660	239,092
Depreciation ($162,303; 1982–$138,958) and amortization	191,583	169,105
Exploration	90,336	98,268
Interest–net (including interest on long-term debt of $151,235; 1982–$131,669)	168,523	145,525
	3,099,223	2,955,144
	904	(124,947)
Income and production taxes	(11,886)	(65,890)
Minority interests in earnings of subsidiaries	9,673	6,457
	(2,213)	(59,433)
Earnings (loss) before the following	3,117	(65,514)
Share of losses in associated companies	(8,731)	(74,659)
Unusual items (note 10)	(28,985)	57,229
Loss	$ (34,599)	$ (82,944)
Loss per common share	$ (0.58)	$ (1.00)

Retained Earnings

Balance, beginning of year	$ 1,187,563	$ 1,388,180
Loss	(34,599)	(82,944)
	1,152,964	1,305,236
Dividends (note 7(e))	91,022	117,673
Balance, end of year	$ 1,061,942	$ 1,187,563

(See accompanying notes)

Noranda Mines Limited
(Incorporated under the laws of Ontario)

Consolidated Balance Sheet

(in thousands)
December 31

Assets	1983	1982
Current assets		
Cash and short-term notes	$ 25,832	$ 21,898
Marketable investments, at cost (quoted market value $107,526; 1982 – $111,987)	106,664	108,865
Accounts, advances and tolls receivable	952,112	712,023
Inventories	945,530	963,852
	2,030,138	1,806,638
Investments in and advances to associated and other companies [note 3]	1,200,281	1,097,333
Fixed assets		
Property, buildings and equipment, at cost	4,069,729	3,777,687
Accumulated depreciation	(1,423,533)	(1,279,684)
	2,646,196	2,498,003
Other assets [note 4]	254,355	302,916
	$ 6,130,970	$ 5,704,890

Auditors' Report

To the Shareholders of
Noranda Mines Limited:

We have examined the consolidated balance sheet of Noranda Mines Limited as at December 31, 1983 and the consolidated statements of earnings, retained earnings and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these consolidated financial statements present fairly the financial position of Noranda Mines Limited as at December 31, 1983 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied, except for the change in the method of accounting for foreign currency translation as explained in note 2 to the consolidated financial statements, on a basis consistent with that of the preceding year.

Toronto, Canada,
February 23, 1984.

Clarkson Gordon
Chartered Accountants

Liabilities	1983	1982
Current liabilities		
Bank advances [note 5 (c)]	$ 192,138	$ 184,571
Accounts payable	778,889	492,250
Taxes payable	38,339	46,731
Debt due within one year	49,429	41,344
	1,058,795	764,896
Deferred liabilities and revenues	82,904	87,187
Taxes provided not currently payable	175,901	276,798
Long-term debt [note 5(a)]	2,061,810	1,722,854
Minority interest in subsidiaries	151,737	147,273
Shareholders' equity [note 7]		
Capital stock	1,662,370	1,658,520
Retained earnings	1,061,942	1,187,563
	2,724,312	2,846,083
Currency translation adjustment [note 2]	9,381	—
Less the Company's pro rata interest in its shares held by subsidiary and associated companies	(133,870)	(140,201)
	2,599,823	2,705,882
Commitments and contingencies [note 6]		
	$ 6,130,970	$ 5,704,890

(See accompanying notes)

On behalf of the Board

Alfred Powis

A. Powis, Director

W. P. Wilder

W. P. Wilder, Director

Consolidated Statement of Changes in Financial Position

(in thousands)
Years ended December 31

	1983	1982
Funds from (to) operations		
Loss	$ (34,599)	$ (82,944)
Mining properties write-down	94,546	—
Depreciation and amortization	191,583	169,105
Taxes provided not currently payable	(98,726)	(47,541)
Minority interests in earnings of subsidiaries	9,673	6,457
Losses of associated companies net of dividends received	8,001	68,611
	170,478	113,688
Funds from (to) operating working capital		
Change in accounts, advances and tolls receivable	(240,089)	(58,447)
Change in inventories	18,322	(89,554)
Change in accounts and taxes payable	278,247	(35,338)
	56,480	(183,339)
Uses of funds		
Fixed asset additions	358,903	662,747
Deferred expenditures	39,923	42,921
Investments and advances	98,960	29,061
Dividends - shareholders	91,022	117,673
- minority shareholders of subsidiaries	6,526	3,252
Payment of debt	79,815	99,826
	675,149	955,480
Financing required	448,191	1,025,131
Sources of financing		
Brenda Mines Limited	—	62,863
Issue of common shares	3,850	17,076
Long-term financing	383,888	899,957
Fixed asset disposals	56,440	31,945
Other	(1,821)	42,621
	$ 442,357	$ 1,054,462
(Increase) decrease in bank advances less cash, short term notes and marketable investments	$ (5,834)	$ 29,331

(See accompanying notes)

1. Accounting Policies

The principal accounting policies followed by Noranda are summarized under the caption "Accounting Policies".

2. Change in Accounting Policy

In 1983, the Company changed its method of accounting for foreign currency translation in accordance with the methods recommended by the Canadian Institute of Chartered Accountants. This change has been applied prospectively from January 1, 1983 and accordingly the previously reported consolidated balance sheet at December 31, 1982 and the consolidated statements of earnings, retained earnings and changes in financial position for the year then ended have not been restated. The effect of this change on the current year's earnings is not material.

By translating all foreign currency denominated items at January 1, 1983, using this method the deferred gain recorded as a separate component of shareholders' equity would have been approximately $11,000,000.

3. Investments

(a) Investments in and advances to associated and other companies consist of:

	Noranda's Direct Interest	Carrying Value 1983	Carrying Value 1982
		(in thousands)	
Associated companies carried on an equity basis –			
Brenda Mines Limited	49%	$ 17,388	$ 19,631
Craigmont Mines, Limited	20%	1,303	1,365
Kerr Addison Mines Limited	49%	49,521	43,154
MacMillan Bloedel Limited	49%	645,537	614,310
Northwood Forest Industries Limited	50%	64,239	77,106
Pamour Porcupine Mines, Limited	49%	3,600	1,809
Placer Development Limited	31%	118,143	67,830
Tara Exploration and Development Company Limited	49%	52,081	49,613
Frialco Friguia Guinean Consortium	20%	18,036	14,519
Associated manufacturing companies		55,770	60,672
Other companies		71,107	40,332
		1,096,725	990,341
Other investments and advances, at cost –			
Shares		97,773	104,117
Advances		5,783	2,875
		$1,200,281	$1,097,333

(b) Included above are shares carried at a book value of $922,688,000 which had a quoted market value of $1,119,061,000 at December 31, 1983 ($837,598,000 and $847,888,000, respectively, at December 31, 1982). The latter amount does not necessarily represent the value of these holdings which may be more or less than that indicated by market quotations.

(c) Summarized financial information of MacMillan Bloedel Limited as at December 31, 1983 and 1982 and for the years then ended is as follows:

Financial Position –	*1983*	*1982*
		(in thousands)
Assets:		
Current	$ 692,000	$ 640,500
Investments and other assets	186,900	84,900
Property, plant and equipment	1,235,600	1,365,800
Other	4,300	59,200
	2,118,800	2,150,400
Liabilities:		
Current	502,500	429,700
Long-term debt	544,100	676,000
Deferred income taxes	96,300	130,200
Minority interests in subsidiaries	2,400	5,000
	1,145,300	1,240,900
Shareholders' equity	973,500	909,500
	2,118,800	2,150,400

Results of operations –		
Sales and other income	2,062,800	1,862,400
Costs and expenses	2,091,000	2,053,900
	(28,200)	(191,500)
Income tax recovery	27,200	95,300
Other (including gains on sale of assets; 1982 – including gains on sale of tax credits)	24,900	38,900
Net earnings (loss)	23,900	(57,300)

4. Other Assets

	1983	1982
		(in thousands)
Deferred preproduction and mine development	$ 164,385	$ 238,885
Deferred exploration	46,910	29,195
Other	43,060	34,836
	$ 254,355	$ 302,916

5. Debt

(a) Long-term debt (in thousands)

	1983	1982
Noranda Mines Limited		
9.75% sinking fund debentures due 1994	32,410	32,410
7.50% sinking fund debentures due 1988	15,703	18,300
9.25% sinking fund debentures due 1990	28,852	29,363
Notes payable and revolving term loans [note 5(b)]	845,331	500,000
Variable rate serial debentures due 1986-1990	140,000	—
Norandex Inc.		
4.75%-10.25% mortgage notes payable in monthly instalments to 1990 ($3,108 U.S.; 1982 – $3,825 U.S.)	3,868	4,203
Noranda Aluminum Inc.		
10.50% secured notes due 1995 ($58,000 U.S.; 1982 – $62,400 U.S.)	72,175	64,594
9.75% note due 1987 ($26,250 U.S.; 1982 – $30,000 U.S.)	32,665	35,643
9.75% note due 1985 ($13,333 U.S., 1982 – $16,667 U.S.)	16,591	19,500
Variable rate notes due 1983 (1982 – $25,000 U.S.)	—	29,250
Phase I and III pollution bonds due 2002 ($45,000 U.S.; 1982 – $45,000 U.S.)	55,998	55,517
8% pollution control revenue bonds due 2001 – ($10,500 U.S.; 1982 – $10,500 U.S.)	13,066	10,315
Capital lease – 5.90% industrial revenue bonds, serial and sinking fund issues, maturing to 1993 ($50,345 U.S.; 1982 – $54,340 U.S.)	62,649	58,606
Noranda Inc.		
10% note payable due 1988 – ($30,000 U.S.; 1982 – $30,000 U.S.)	37,332	35,979
Revolving term loans due 1985 to 1987 ($126,156 U.S.; 1982 – $306,025 U.S.)	156,988	373,945
Brunswick Mining and Smelting Corporation Limited		
5.85% first mortgage sinking fund bonds, series "A" due 1986	1,052	3,054
7.25% general mortgage sinking fund bonds, series "A" due 1987	4,249	4,749
11% general mortgage sinking fund bonds, series "B" due 1996	17,332	17,342
Fraser Inc. (note 5(d))		
6.125% sinking fund debentures due 1987 – ($3,000 U.S.; 1982 – $3,750 U.S.)	3,733	4,162
10.75% sinking fund debentures due 1992 ($28,010 U.S.; 1982 – $30,340 U.S.)	34,856	31,363
Revolving term loan due 1986 convertible to a term loan due 1998 (including $164,000 U.S., 1982 – $3,400 U.S.)	262,189	185,003
Purchase money mortgage	—	20,000
Notes payable due 1984-1989	12,483	—
James Maclaren Industries Inc.		
5.75% sinking fund debentures due 1987	6,753	7,478
Bank Loan due 1986-1988	14,978	—
Canada Wire & Cable Limited		
Bank Loans due 1984-1992 (including $138,065 U.S.; 1982 – $123,700 U.S.)	198,553	172,077
Sundry indebtedness	41,433	51,545
	2,111,239	1,764,198
Debt due within one year	49,429	41,344
Total	2,061,810	1,722,854

Maturities of long-term debt are as follows:
1985 – $710,555; 1986 – $381,256; 1987 – $139,148; 1988 – $158,773 and subsequent $672,078

(b) Notes payable with maturities in 1984 and revolving term loans have been classified as long term debt as a result of unconditional commitments the Company has received from its bankers for contractual term credits of $845,331,000 (including $273,470,000 U.S.) expiring from September 15, 1985 to December 31, 1986.

(c) Marketable securities and metal warrants held by certain subsidiaries have been pledged as collateral for bank advances of $39,337,000 to those companies.

(d) As collateral for the sinking fund debentures there is a floating charge over the company's assets, and receivables, inventory and a second floating charge over the remaining assets have been provided as collateral for the revolving term loan.

6. **Commitments and Contingencies**
(a) Approved capital projects and financing commitments outstanding total approximately $722,000,000 at December 31, 1983, extending over three years.

(b) Noranda had guaranteed or was contingently liable for repayment of loans of associated companies to the extent of approximately $72,000,000 at December 31, 1983.

(c) As at December 31, 1983 some of Noranda's pension plans are underfunded and some are overfunded by a greater amount. The unfunded obligation is estimated at $39,500,000 and arises in certain consolidated subsidiaries. The amount of overfunding is estimated at $65,000,000. Because of this overfunding current service contributions of approximately $20,000,000 that would otherwise have been made during the year have not been charged to income.

(d) Two lawsuits have arisen which could adversely affect the Company's interest in the Hemlo property. Lac Minerals Ltd. has disputed the Company's title to three claims which contain 90% of the delineated ore and has restaked the claims in its own name. This dispute is currently before the Supreme Court of Ontario and the trial is scheduled for September, 1984. The prospectors have issued a writ seeking a declaration that their interest is equal to 15% of profits after capital payback, whereas Noranda claims their interest is 7½%. No trial date has been set for this action. The Company believes it has good defences on the merits and is vigorously defending each action while continuing to develop the property.

In addition six Indian tribes have recently announced that they intend to commence legal proceedings claiming ownership of vast areas of northern Ontario including the Hemlo property and the Geco property. To date no action has been commenced.

7. **Shareholders' Equity**
(a) **Capital stock –**

	1983	1982
		(in thousands)
Authorized:		
13,576,493 Preferred shares		
200,000,000 Common shares		
Issued:		
9½% Preferred shares Series A	$ 358,327	$ 358,334
Common shares	1,304,043	1,300,186
	$1,662,370	$1,658,520

(b) **Authorized capital –**
Of the authorized 13,576,493 Preferred shares, the Company has designated 3,601,493 as 9½% cumulative redeemable convertible preferred shares Series A. Each of these shares is convertible into 2.75 common shares until June 15, 1987.

(c) **Summary of common share transactions for the year –**

	Shares	*Amount*
		(in thousands)
Common shares issued, beginning of year	127,314	$1,300,186
Stock option plan	80	1,517
Stock dividends	94	2,333
Conversion of preferred shares	—	7
Common shares issued, end of year	127,488	$1,304,043
Company's pro rata interest in its shares held by subsidiary and associated companies	9,549	116,032
Net shares	117,939	$1,188,011

The earnings per share calculations have been based on the weighted average number of shares outstanding, 117,785,920 in 1983 and 116,727,479 in 1982.

(d) **Preferred shares –**
Of the 3,583,265 preferred shares outstanding at December 31, 1983, 512,556 are held by associated companies. The Company's pro rata interest of $17,838,000 in those shares has been deducted from shareholders' equity.

(e) **Summary of dividends –**

	1983	1982
		(in thousands)
During the year the following dividends were declared:		
Common	$ 63,718	$ 95,039
Preferred	34,041	33,818
Total	97,759	128,857
Less the Company's pro rata share of dividends paid to subsidiary and associated companies	6,737	11,184
Net charge to retained earnings	$ 91,022	$ 117,673

(f) Stock options –
During the year ended December 31, 1983, 79,815 shares were issued under the Company's stock option plan for $1,517,000 and options on 21,430 shares were cancelled. At December 31, 1983 options on 889,748 shares were outstanding, exercisable at prices varying from $8.34 to $22.91 for periods up to 1989.

(g) Share purchase plan –
Under the Company's share purchase plan, shares are sold to a trustee for resale to employees financed by an interest-free loan from the Company. At December 31, 1983, the amount of the loan included in accounts receivable was $11,219,000.

(h) Purchases for cancellation –
Shareholders have the right to receive either cash dividends or the equivalent in common shares. Under an exemption order of the Ontario Securities Commission the Company may purchase for cancellation on an annual basis through the facilities of the Toronto Stock Exchange a number of common shares approximately corresponding in number to the common shares issued by it as stock dividends, subject to certain conditions. During 1983, 93,517 shares were issued as stock dividends and no shares were purchased for cancellation.

8. Related Party Transactions

The following summarizes the related party transactions during the year between Noranda and associated companies.

(a) Sale of goods and services at market prices on normal trade terms amounted to $61,676,000 and gave rise to accounts receivable at December 31, 1983 of $4,559,000 (1982 – $40,908,000 and $7,570,000 respectively).

(b) Purchase of goods and services at market prices on normal trade terms amounted to $249,853,000 and gave rise to accounts payable at December 31, 1983 of $9,371,000 (1982 – $78,149,000 and $540,000 respectively).

(c) Noranda and associated companies participate in a short term investment pool, which gave rise to accounts receivable of $10,740,000 at December 31, 1983 (1982 – $19,450,000). Interest charges and credits are calculated at market rates.

9. Business Segment Information *(in thousands)*

Noranda operates in three industry segments: production of primary materials including copper and other metals such as zinc, lead, silver, molybdenum, phosphates and potash, related metallurgical operations and oil and gas production; manufacturing of brass mill products, wire and cable, iron foundry products, wire rope, plastic pipe, primary aluminum and aluminum sheet, extrusions and building products; forest products such as lumber, plywood, waferboard, market pulp and paper.

Operations and identifiable assets by geographic area and industry segment are presented below:

(a) Geographic areas	*1983*	*1982*
Revenue:		
Canada – domestic	$1,151,572	$1,135,579
– export	687,206	891,129
	1,838,778	2,026,708
U.S.A.	1,261,349	803,489
Total	$3,100,127	$2,830,197
Segment operating profit (loss):		
Canada	$ 245,915	$ 177,366
U.S.A.	13,848	(58,520)
Total	$ 259,763	$ 118,846
Identifiable assets:		
Canada	$4,367,385	$4,179,769
U.S.A.	1,631,089	1,394,358
	5,998,474	5,574,127
Cash and marketable investments	132,496	130,763
Total	$6,130,970	$5,704,890

(b) Industry segments

Revenue:	1983	1982
Metals and minerals –		
Copper	$ 358,885	$ 390,417
Other metals	602,586	543,944
Oil and gas	103,332	86,604
	1,064,803	1,020,965
Manufacturing	1,435,326	1,219,337
Forest products	726,163	653,376
	3,226,292	2,893,678
Inter segment sales	(132,000)	(100,000)
Investment income	5,835	36,519
Total	$3,100,127	$2,830,197

Excludes Noranda's share of revenues of associated companies accounted for on an equity basis, as follows: metals and minerals $269,426, manufacturing $204,333, forest products $1,230,317 ($268,236, $286,860 and $1,048,570 respectively in 1982).

Segment operating profit (loss):	1983	1982
Metals and minerals –		
Copper	$ 64,178	$ 22,190
Other metals	20,842	(15,324)
Oil and gas	92,082	76,394
	177,102	83,260
Manufacturing	36,485	(23,164)
Forest products	46,176	58,750
Total segment operating profit	259,763	118,846
Exploration	(90,336)	(98,268)
Income and production taxes	11,886	65,890
Minority interest	(9,673)	(6,457)
Share of losses in associated companies	(8,731)	(74,659)
Interest expense	(168,523)	(145,525)
Unusual items	(28,985)	57,229
Loss	$ (34,599)	$ (82,944)

Earnings (loss) after taxes:	1983	1982
Metals and minerals –		
Copper	$ 49,429	$ 12,637
Other metals	40,521	(6,686)
Oil and gas	38,107	24,684
	128,057	30,635
Less exploration	(58,973)	(52,826)
	69,084	(22,191)
Manufacturing	15,190	(14,234)
Forest products	3,836	(55,704)
Earnings (loss) before borrowing cost	88,110	(92,129)
Less cost of borrowing (net of investment income and taxes)	93,724	48,044
	(5,614)	(140,173)
Unusual items	(28,985)	57,229
Loss	$ (34,599)	$ (82,944)

Total assets employed:	1983	1982
Metals and minerals		
Copper	$ 921,922	$ 847,450
Other metals	1,497,284	1,449,705
Oil and gas	369,393	364,488
	2,788,599	2,661,643
Manufacturing	1,564,007	1,390,937
Forest products	1,657,268	1,527,447
Inter segment receivables/payables	(11,400)	(5,900)
	5,998,474	5,574,127
Cash and marketable investments	132,496	130,763
Total	$6,130,970	$5,704,890

Capital expenditures:	1983	1982
Metals and minerals		
Copper	$ 19,279	$ 50,883
Other metals	100,510	126,358
Oil and gas	26,511	64,611
	146,300	241,852
Manufacturing	60,457	272,452
Forest products	152,146	148,443
Total	$ 358,903	$ 662,747

Depreciation and amortization:		
Metals and minerals		
Copper	$ 17,458	$ 31,063
Other metals	85,128	68,430
Oil and gas	6,650	5,662
	109,236	105,155
Manufacturing	47,877	33,207
Forest products	34,470	30,743
Total	$ 191,583	$ 169,105

10. Unusual Items (in thousands)

1983 – During the year the company recorded the following unusual items:

(a) Write down of the carrying value of certain mining properties resulting in an after tax charge to earnings of	$(54,649)
(b) Share of net after tax gains of associated companies on disposal of assets	13,122
(c) Gain arising from the disposal of a portion of the Company's investment in Placer Development Limited as a result of a dilution in its interest following a common stock issue during the year	12,542
	$(28,985)

1982 – Pursuant to the U.S. Economic Recovery Act of 1981 certain subsidiary and associated companies sold tax benefits for a net gain after income taxes and related expenses of	$ 57,229

In view of the change in reporting to reflect the re-organization the undernoted table is provided for comparison with previous results.

	1983	1982
Copper	12.6	49.4
Zinc	(5.6)	35.3
Other	(13.4)	(12.7)
Major Subsidiaries and Associates	12.3	18.0
	5.9	90.0
Oil Gas	24.7	38.1
	30.6	128.1

Effects of Inflation

The accompanying statement attempts to show the effect of inflation on funds generated by Noranda's business and is based on an approach recommended by a committee appointed by the Ontario government in 1977. The Statistics Canada price deflator index has been used in the calculations and is a general index which may not reflect the full impact of inflation on costs of the company. However, the intent of the statement is to provide only a perspective.

Funds generated from operations (total from statement of changes in financial position)		$ 170,500,000
from this, deduct the funds required to pay for the original cost of productive assets (historical cost depreciation)		191,600,000
which results in this shortage of funds, on a historical accounting basis		(21,100,000)
and to take into account the increase due to inflation in the cost of maintaining the business, the following funds are also required:		
to replace inventories at higher prices	$ 39,000,000	
for plant, machinery and equipment at higher prices	116,000,000	
	155,000,000	
but, partly offsetting these requirements, additional funds may be available from borrowing if present debt-equity ratio is maintained	69,000,000	86,000,000
which leaves an overall shortage of funds with nothing available from the year's operations for dividends or expansion		$(107,100,000)

This statement demonstrates that in 1983 $346.6 million ($191.6 million plus $155 million) should have been spent to maintain the business, given the level of inflation Canada has been experiencing. The company generated $170.5 million and could have borrowed $69 million which on this basis would have left a shortage of $107.1 million before any distribution to shareholders or expenditure on growth.

What in fact happened in 1983 was that we spent some $100 million on plant to maintain the business, $340 million in acquisitions and expansion of facilities and $97.5 million to pay dividends to shareholders. Working capital was reduced by $70 million and $388 million of outside capital had to be raised to help pay for these expenditures.

By this measure Noranda spent $316.6 million less than the amount calculated as being necessary to conserve working capital and to maintain the business. This erosion of the capital base must be recovered in subsequent years if Noranda is to remain financially strong. A modest dividend, representing a 3.6% return on shareholders equity, and the expansion expenditures came mainly out of borrowed funds. Consequently the debt to equity ratio deteriorated during the year.

Noranda has decided for now not to adopt the current recommendations of the Canadian Institute of Chartered Accountants on current cost accounting. These recommendations would have us estimate the cost of maintaining productive capacity. It is our view, however, that this approach is not appropriate to resource industries where the replacement of resources to maintain productive capacity is not within the control of the business. As well, estimating the cost of maintaining productive capacity becomes dangerously subjective in industries experiencing significant technological change.

Operating Interests

Metals and Minerals

	Canada				Other Countries	
Alpha	Alberta Sulphate Metiskow, Alta.	*sodium sulphate*	Brenda Mines (49.9%) Peachland, B.C.	*copper molybdenum*	Noranda Grey Eagle California, U.S.A.	*gold and silver*
	Babine Division Granisle, B.C.	*copper gold*	Oil and Gas Division Calgary, Alta.	*oil and gas*	Noranda Lakeshore Mine Arizona, U.S.A.	*copper*
	Boss Mountain Division Hendrix Lake, B.C.	*molybdenum*	Central Canada Potash Colonsay, Sask.	*potash*	Northland Gold (62.5%) Alaska, U.S.A.	*gold*
			Goldstream Division Revelstoke, B.C.	*copper zinc, silver*		
Beta	Horne Division Noranda, Que.	*copper smelter*	Chadbourne Mine Noranda, Que.	*gold*		
	Division CCR Montreal East, Que.	*copper refiner*	Les Mines Gallen (50%) Noranda, Que.	*zinc silver*		
	Division Mines Gaspé Murdochville, Que.	*copper smelter*				
Delta	Belledune Fertilizer Belledune, N.B.	*diammonium phosphate*	Canadian Electrolytic Zinc (90.2%) Valleyfield, Que.	*zinc reduction*		
	Brunswick Mining and Smelting (64.1%) Smelting Division Belledune, N.B. Mining Division Bathurst, N.B.	*lead smelter* *zinc, lead copper silver*	Federated Genco Burlington, Ont; Lachine, Que.	*metal alloys*		
			Heath Steele Mines (75% Little River Joint Venture) Newcastle, N.B.	*copper, zinc lead, silver*		
			Matagami Division Matagami, Que.	*zinc, copper and silver*		
Gamma	Geco Division Manitouwadge, Ont.	*copper zinc, silver*	Pamour Porcupine Mines (48.7%) Pamour, Ont.	*gold*		
	Lyon Lake Division Ignace, Ont.	*zinc, copper lead, silver*	Mattabi Mines (60%) Ignace, Ont.	*zinc, copper silver*		
Oil and Gas	Canadian Hunter (87%) Calgary, Alta.	*oil and gas*			American Hunter (85%) Denver, Colorado, U.S.A.	*oil and gas*
	Canada		*U.S.A*		*Other Countries*	
Marketing	Noranda Sales Toronto, Ontario	*resource marketing*	Rudolf Wolff New York, N.Y.	*commodity brokers*	Noranda Sales Corp. of Canada London, U.K.	*resource marketing*
	Nutrite (50%) Montreal, Que.	*fertilizer marketing*	Canadian American Metal (65%) New York, N.Y.	*resource traders*	Rudolf Wolff Group London, U.K., Zurich, Switzerland, Hamburg and Frankfurt, West Germany	*resource marketing*
			Norcoal (70%) Charleston, W. Virg.	*coal trading*	Elnor Comercio E (45%) Representacoes, S.A. Sao Paulo, Brazil	*metal marketing*
Kerr Addison (49%)	Kerr Addison Mine Virginiatown, Ont.	*gold*				
	Anderson Exploration (32.6%) Calgary, Alta.	*oil and gas*				
Tara (49%)	Tara Explorations (49%) Toronto, Ontario				Tara Mines (75%) Republic of Ireland	*zinc, lead*
Placer Development (31%)	Endako Mine Fraser Lake, B.C.	*molybdenum*	Golden Sunlight Mine Montana	*gold*	Minera Real De Angeles (34%) Mexico	*silver, lead zinc*
	Equity Silver Mines (70%) Houston, B.C.	*silver, gold copper*	McDermitt Mine (51%) Nevada	*mercury*	Marcopper Mining (39%) Philippines	*copper*
	Gibraltar Mines (71.9%) McLeese Lake, B.C.	*copper, molybdenum*	Cortez Gold Mines (39.6%) Nevada	*gold*		
	Placer CEGO Petroleum Calgary, Alta.	*oil and gas*				

Forest Products

	Canada	U.S.A.	Other Countries
Fraser (63%) Edmundston N.B.	Atholville, Kedgwick and Plaster Rock, N.B. Thorold, Ont. *boxboard, lumber, pulp and paper*	Fraser Paper Madawaska, Maine *paper*	
	Island Paper Mills (50%) New Westminster, B.C. *fine paper*	J. Paul Levesque & Sons (50%) Ashland, Maine *lumber*	
James Maclaren Industries Buckingham Que.	Masson, Thurso, Notre-Dame du Laus, High Falls, and Lac-des-Iles, Que. *newsprint, pulp, lumber, particleboard and hydro power*		
	Maniwaki Industries (70%) Maniwaki, Que. *lumber, veneer and flooring*		
	Normick Perron (27%) La Sarre, Beattyville, Amos and Senneterre, Que., Kirkland Lake and Cochrane, Ont. *lumber, plywood and waferboard*		
MacMillan Bloedel (49%) Vancouver B.C.	Powell River, Port Alberni, Nanaimo and New Westminster, B.C., Hudson Bay, Sask. Nipigon, Thunder Bay, and Sturgeon Falls, Ont. *lumber, plywood, waferboard, particleboard, pulp, paper, newsprint, hardboard, siding, bags 22 Sales Offices and Distribution Centres*	Pine Hill, Ala.; Edenton, N.C.; Elmira, N.Y.; Jersey City and Union, N.J.; Odenton, Maryland; Cleveland, Ohio; Chicago, Ill.; Little Rock, Arkansas; Magnolia, Miss. and Houston, Texas *linerboard, medium, lumber and plywood, corrugated containers 13 Sales Offices and Distribution Centres*	MacMillan Smurfit SCA (50%) United Kingdom *corrugated containers, 16 plants*
	Island Paper Mills, (50%) New Westminster, B.C. *fine paper*		Koninklijke Nederlandse Papierfabrieken (41%) Holland and Belgium *paper and packaging*
	MacMillan Bathurst (50%) Mississauga, Ont. *corrugated containers, 16 plants*		Celupal S.A. (38%) Spain *paper*
			Embrasca-Empreendimentos Florestais e Agricolas Brazil *lumber*
Northwood Pulp and Timber (50%) Prince George B.C.	Houston, Shelley and Upper Fraser, B.C. and Chatham, N.B. *lumber, pulp, waferboard and plywood*	Northwood Panelboard Bemidji, Minn. *waferboard*	
	B.C. Chemicals Prince George, B.C. *chlorate and tall oil*		
Northwood Mills Toronto, Ont.	Brampton, Ont. Langley, B.C., Edmonton and Calgary, Alta., Winnipeg, Man., Boucherville and St. Augustin, Que., Moncton, N.B., *market-pulp, lumber and other building products*		Northwood Mills of Canada. Cardiff, Wales

Manufacturing

	Canada	U.S.A.	Other Countries
Toronto Group	Canada Wire and Cable Toronto, Fergus, Simcoe, Orangeville, Ont.; Montreal, Quebec City, Que., Winnipeg, Man.; Weyburn, Sask.; New Westminster, B.C. *copper rod, wire and cable; 8 distribution centres*	Carol Cable Co. Inc. Pawtucket, Woonsocket, Warren, Lincoln and Central Falls, R.I.; Manchester, N.H.; New Bedford and Taunton, Mass.; River Grove, Ill.; Rancho Dominguez, Cal. *wire and cable*	Canada Wire and Cable (International) Associates Alambres Dominicanos, Dominican Republic Fadaltec, Colombia Iconel, Venezuela Industrias Conductores, Monterey, Mexico Irish Cable and Wire, Republic of Ireland Nigerchin Electrical Development Co., Nigeria Tolley Holdings, New Zealand Transage, South Africa *wire, cable and other products*
	Grandview Industries Rexdale (Toronto), Brampton, Ont.; Weyburn, Sask.; Langley, B.C. *plastic moulding and extrusion*	Canada Wire and Cable Inc. Los Angeles, Cal. *wire and cable distribution*	
	Canplas Industries (35%) Barrie, Ont., New Westminster, B.C. *plastic moulding*		
Montreal Group	Wire Rope Industries (51.4%) Montreal, and Pointe Claire, Que.; Truro, N.S.; Vancouver, B.C. *steel wire rope, strand and slings* *11 service centres*	Bridon American (49.0%) Wilkes Barre, Pa. *hi-carbon wire and steel wire rope*	
	Gourock Division Halifax, N.S. *fishing nets, supplies and industrial cordage* *2 service centres*	Gourock Division Washington *fishing nets, supplies and industrial cordage*	
	Noranda Metal Industries Montreal East, Que.; Fergus, Ont.; New Westminster, B.C.; Moncton, N.B. *copper and alloys, strip rod and tube* *secondary metals*	Noranda Metal Industries Newtown, Conn. *heat transfer tube and components*	
	Norcast Inc. (60%) Mont Joli, Que.; New Liskeard, Ont. *castings, media and conveyances for the mining industry*		
	NorSand Metals Inc. (50%) Arnprior, Ont. *high nickel and stainless tube*		
Cleveland Group		Noranda Aluminum New Madrid, Mo. *aluminum reduction, wire and cable*	Friguia (20%) Republic of Guinea *alumina*
		Norandal Huntingdon, Tenn. *aluminum, sheet and foil*	
		Norandex Cleveland, Ohio and Chicago, Ill. *aluminum, building products,* *60 distribution centres*	

Directors

(Year of election in brackets)

J. W. Bird (1983)
President and General Manager
J. W. Bird and Company Limited
Fredericton

*Jack L. Cockwell (1981),
Executive Vice-President, Brascan, Toronto

James C. Dudley, (1970)
Chairman, Dudley & Wilkinson, New York

*J. Trevor Eyton, (1981)
President and Chief Executive Officer,
Brascan, Toronto

Brian Flemming, (1981)
Partner in the legal firm of
Stewart MacKeen & Covert, Halifax

*Pierre Lamy, (1981)
Economic and Financial Consultant, Montreal

Paul M. Marshall, (1981)
President and Chief Executive Officer,
Westmin Resources, Calgary

David E. Mitchell, (1973)
President and Chief Executive Officer,
Alberta Energy Company, Calgary

*André Monast, (1966)
Partner in the legal firm of
Letourneau & Stein, Quebec

Donald S. McGiverin, (1980)
Governor, President and Chief Executive Officer,
Hudson's Bay Company, Toronto

*W. Darcy McKeough, (1979)
President and Chief Executive Officer,
Union Gas, Cedar Springs

Fernand Paré (1981)
President and General Manager, La Solidarité,
Compagnie d'assurance sur la vie, Quebec

*Alfred Powis, (1964)
Chairman and Chief Executive Officer,
Noranda Mines, Toronto

Antoine Turmel, O.C., (1981)
Chairman and Chief Executive Officer,
Provigo Inc., Montreal

H. Richard Whittall, (1982)
Vice-Chairman and Director
Richardson Greenshields of Canada Limited,
Vancouver

*William P. Wilder, (1966)
Chairman
The Consumers' Gas Company

Harold M. Wright, (1981)
Chairman, Wright Engineers, Vancouver

*Adam H. Zimmerman, (1974)
President and Chief Operating Officer,
Noranda Mines, Toronto

*Member of the Executive Committee

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W. James
A. J. Little
L. G. Lumbers
T. H. McClelland
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W. S. Row
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Senior Vice-President-Mines

K. C. Hendrick,
Senior Vice-President-Sales

J. O. Hinds,
Senior Vice-President-Exploration & Development

R. P. Riggin,
Senior Vice-President-Corporate Relations

William Allan,
Group Vice-President

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Group Vice-President

J. M. Gordon,
Group Vice-President

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Group Vice-President

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Vice-President-Investments

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Vice-President & Associate Treasurer

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Vice-President-Milling

G. H. Corlett,
Vice-President-Business Services

D. Goldman,
Vice-President-Operations-C.C.R.

P. L. Fowler,
Vice-President-Operations-Horne

F. X. Koch,
Vice-President-Engineering & Construction

Camille Marcoux,
Vice-President-Mines, Quebec

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Vice-President-Accounting Services

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Vice-President-Corporate Relations

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L. J. Taylor,
Assistant Secretary

T. E. Phelps,
Assistant Treasurer

L. S. Tigert,
Assistant Treasurer

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R. T. Kenny,
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J. A. Masters,
President, Canadian Hunter Exploration

B. T. Ness,
President, Canada Wire and Cable

H. G. Sander,
Managing Director,
Northwood Pulp and Timber

R. V. Smith,
President and Chief Executive Officer
MacMillan Bloedel

Ten year financial review

($ in millions)

Earnings

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Revenue	1,151.9	1,159.3	1,234.8	1,395.8	1,691.1	2,484.7	2,889.3	3,030.4	2,830.2	3,100.1
Expense–excluding interest	889.9	1,046.5	1,118.1	1,250.3	1,426.0	1,810.8	2,244.6	2,700.2	2,752.3	2,959.7
Interest expense	33.8	45.3	61.7	71.9	64.8	65.3	48.4	95.4	145.5	168.5
Income and production taxes	106.6	41.5	25.1	22.7	90.5	227.0	242.2	59.4	(65.9)	(11.9)
Minority interests in earnings of subsidiaries	17.1	10.1	10.1	12.6	24.8	57.2	28.9	9.1	6.5	9.7
Earnings (losses) of Noranda and subsidiaries	104.5	15.9	19.8	38.3	85.0	324.4	325.2	166.3	(8.2)	(25.9)
Share of earnings (losses) in associates	50.4	34.6	26.9	33.5	49.3	70.1	83.1	(1.5)	(74.7)	(8.7)
Earnings (loss)	154.9	50.5	46.7	71.8	135.2	394.5	408.4	164.8	(82.9)	(34.6)

Financial Position

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Capital employed										
Working capital	182.9	188.0	197.5	167.3	281.6	687.4	821.5	867.0	1,041.7	971.3
Investments and advances	326.0	372.2	361.9	387.8	410.0	406.1	529.4	1,159.3	1,097.3	1,200.3
Fixed assets–net	685.0	805.5	855.5	898.0	958.8	1,236.0	1,536.9	2,037.2	2,498.0	2,646.2
Other assets	90.8	104.6	118.5	115.8	123.3	189.3	262.5	316.0	302.9	254.4
	1,284.7	1,470.3	1,533.4	1,568.9	1,773.7	2,518.8	3,150.3	4,379.5	4,939.9	5,072.2
Capital sources										
Shareholders' equity	692.8	696.4	715.3	758.7	884.4	1,463.2	2,001.0	2,869.4	2,705.9	2,599.8
Long-term debt	383.7	533.1	603.4	588.9	604.1	602.5	580.5	922.3	1,722.9	2,061.8
Minority interest in subsidiaries	99.9	114.4	120.3	128.2	150.9	194.0	199.0	210.2	147.3	151.7
Other	108.3	126.4	94.4	93.1	134.3	259.1	369.8	377.6	363.8	258.9
	1,284.7	1,470.3	1,533.4	1,568.9	1,773.7	2,518.8	3,150.3	4,379.5	4,939.9	5,072.2

Changes in Financial Position

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Sources										
From operations	244.3	126.9	83.9	145.9	218.3	605.9	570.0	301.2	113.7	170.5
Issue of shares and debt (net)	38.4	139.3	70.3	(10.1)	36.4	255.8	228.7	1,028.6	817.6	299.8
Other (net)	8.9	1.0	8.8	(3.1)	15.7	(21.2)	(16.4)	131.2	95.8	48.1
	291.6	267.2	163.0	132.7	270.4	840.5	782.3	1,461.0	1,027.1	518.4
Application										
Dividends	42.3	47.2	28.3	28.3	30.7	70.8	126.9	172.0	117.7	91.0
Capital expenditure– Fixed assets	101.7	158.2	115.6	119.6	115.1	284.9	293.0	596.5	662.7	358.9
Investments and advances (net)	73.4	31.0	(21.9)	7.3	(2.1)	(2.0)	(2.1)	573.3	29.1	99.0
Other, including acquisitions	37.9	25.7	31.6	7.6	(12.5)	81.0	230.3	73.7	42.9	39.9
Increase (decrease) in working capital	36.3	5.1	9.4	(30.1)	114.2	405.8	134.2	45.5	174.7	(70.4)
	291.6	267.2	163.0	132.7	270.4	840.5	782.3	1,461.0	1,027.1	518.4

Common shares data *

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Per share–$										
Earnings (loss)	2.20	0.71	0.66	1.01	1.91	4.70	4.06	1.33	(1.00)	(0.58)
Dividends	0.60	0.67	0.40	0.40	0.43	0.85	1.25	1.40	0.75	0.50
Market price range–$										
High	18.00	13.25	13.25	11.46	13.00	22.83	33.63	36.38	27.88	29.38
Low	8.88	9.08	8.79	6.54	6.88	12.13	22.13	19.38	11.38	18.88
Close	9.50	9.71	9.67	8.33	12.25	22.37	30.00	22.50	19.50	26.50
Common shares issued (000)	73,327	73,354	73,392	73,394	75,548	101,536	113,274	126,170	127,314	127,488
Preferred shares issued (000)	–	–	–	–	–	–	–	3,583	3,583	3,583

* Previous years data adjusted for the 3 for 1 split in August, 1979

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